McGill

PHTH 551 Physical Therapy Neurological Rehabilitation

Credits: 4

Prerequisites: For students entering the qualifying year of the M.Sc. (A) PT program, knowledge of basic neuroanatomy and neurophysiology is required. Self-directed learning modules in basic neuroanatomy and neurophysiology will be available to students once registered.

For students currently registered in the B.Sc. Rehabilitation Science (major PT) program, successful completion of POTH 455 and ANAT 323 is required to register for PHTH 551.

Coordinators:

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Available by email or for virtual meetings by appointment.

Instructors: PT clinicians (lab instructors) – Debra Gelber, Stephania Palimeris, Romina Perrotti, Rosa Romano, and TBA
Jill Boruff, MLIS (liaison librarian)
Isabelle Gagnon, PT, PhD
Allison Jacobson PT, MSc
Michel Danakas PT
Mindy Levin, PT, PhD

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

Course Description: This four-credit course introduces the principles of neurological rehabilitation pertinent to physical therapy. By emphasizing the fundamentals of neuro-assessment, problem analysis, clinical reasoning, treatment planning and progression in various neurological conditions, this course **builds a conceptual framework that continues into PHTH 561.** The fall semester course PHTH 551 incorporates the foundations of best evidence, informed practice, rehabilitation science, motor learning and neuroplasticity to develop a client-centered

approach for the evaluation and management of neurological impairments and dysfunctions. A "problem-solving" and "task-oriented" approach to treatment will be emphasized (as opposed to an approach based on medical diagnosis).

Course Structure: The course includes **one 3-hour synchronous remote classes (via zoom) per week and one 3-hour hands-on skills lab on campus** for 13 weeks. Two mandatory **clinical reasoning workshops (CRWs)** are included to provide opportunities for case discussion and the development of observational and clinical reasoning skills related to neurological conditions. Additionally, there are **two neuro-shadowing sessions** (pre-recorded clinical encounters) scheduled for asynchronous viewing which are associated with SOAPIE assignments. **Three open labs** (unstructured practice time) are also scheduled on Friday mornings (alternating with PHTH 550). A **final open lab** with all instructors present will be offered on the last day of class for OSCE preparation.

Instructor message regarding remote delivery: The remote learning context presents **new challenges for all involved**. We acknowledge the challenges that students **may be experiencing due to the pandemic and 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**.

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 through the lens of privilege and oppression**. 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**. I ask that you also **join us in this commitment to foster respect for one another, enhance solidarity, and build community**.

Instructional Method: Lectures and **Clinical reasoning workshops (CRW)** will be delivered in an online **remote flexible format via Zoom**. Lecture presentations and additional class/lab material will all be **posted on MyCourses**. **Clinical skills labs** will be provided during in-person labs at the School of Physical and Occupational Therapy. **Videos** associated with the clinical skills labs will be posted **myCourses** or on **Microsoft Stream** (app of Microsoft Outlook accessible to all McGill students in their McGill Outlook account) and **students will be expected to watch the videos prior to their respective labs**.

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 will be created during the first week of classes and consist of 4-6 students.

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

All fixed (synchronous) sessions on zoom will be recorded and made **available on myCourses**. **Students must consent to being recorded** if they are attending a lecture or participating in a component of the course that is being recorded. Students will be notified through a 'pop-up' box in Zoom if a lecture or portion of a class is being recorded. Discussions held in **break-out rooms will not and cannot be recorded.**

Student Participation: All students are expected to participate in this course during the online remote (synchronous) lectures and interactive CRW sessions. During these sessions, at times, video, audio, polls and chat will be used at the discretion of the instructor. All students are expected to watch any **pre-recorded lectures or asynchronous videos/material** on their own time while following the weekly course schedule.

Although not mandatory, students are strongly encouraged to turn on their videos during small groups discussions, breakout rooms of CRWs, team discussions/tests, etc.

All students are **expected to attend all in-person labs** unless they receive prior approval from the course coordinators or have a University accepted reason for not participating in a specific lab (refer to Attendance policy below). Students are expected to **watch all pre-recorded lab and instructional videos prior to their respective in-person labs**. Attendance will be taken for all in-person labs and all remote online mandatory fixed sessions (CRWs).

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

Student Learning Objectives: This course will cover essential competencies and milestones related to the domains of **Physiotherapy Expertise, Communication, Collaboration, Management, Scholarship and Professionalism** according to the National Physiotherapy Advisory Group (NPAG) Competency Profile for Physiotherapists in Canada (2017). Additionally, the course refers to **Foundational knowledge** (Appendix 1) and **Common Conditions in**

Physiotherapy (Appendix 3) of the **Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines** (2019).

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

Learning objectives	Milestones
1. Recognize the principles of neurological rehabilitation across the life span and explain the underlying assumptions and scientific basis for intervention. **2.** Appraise the principles of normal development and aging to apply basic neuroscience concepts. **3.** Apply the International Classification of Functioning (ICF) model/framework to neurological populations and recognize the individual bio-medical, psychological, social, environmental and contextual factors which can influence health, treatment, rehabilitation and disease management. **4.** Outline the essential pathophysiology and basis for sensori-motor dysfunctions and evidence-informed treatment for selected adult neuromuscular conditions (ie. Guillain Barré Syndrome, Multiple Sclerosis, Amyotrophic Lateral Sclerosis, Post-Polio Syndrome) and for traumatic and non-traumatic lesions of the spinal cord.	**Foundational knowledge** (Appendix 1) and **Common Conditions in Physiotherapy** (Appendix 3) of the Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines (2019)
5. Understand and employ a client-centered approach with older adults and adults with neurological conditions **6.** Appraise information and communication that are relevant to the patient and to neurorehabilitation. **7.** Perform components of a physical therapy neuro-assessment	**Employ a client-centered approach:** 1.1.1 - 1.16 **Ensure physical and emotional safety of client:** 1.2.1 - 1.2.5 **Conduct client assessment:** 1.3.1 – 1.3.7
8. Appraise, interpret, and analyze the results/findings from initial and on-going clinical assessments. **9.** Demonstrate basic clinical reasoning and problem-solving abilities, and sound rationales underlying PT role, client diagnosis/prognosis. **10.** Demonstrate basic clinical reasoning and problem-solving abilities, as well as sound rationales for determining goals and for planning, modifying progressing 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

Learning objectives	Milestones
11. Develop clinical skills related to the performance of basic treatment methods **12.** determine when and how to end PT treatment.	**Complete or transition care**: 1.6.1, 1.6.2
13. Develop and demonstrate professional and effective communication (verbal & non-verbal) during the interview, assessment, and application of treatment. **14.** Document neuro-assessment results (impairments, activity limitations & participation restrictions), analysis of results, clinical impression & prognosis, treatment goals and intervention plans with skill and competency using SOAPIE*[1] framework. [1] S = subjective, O = objective, A = assessment/analysis, P = plan, I = intervention, E = effectiveness	**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
15. Comprehend how the inter-professional team can enhance the management of the sensorimotor dysfunctions discussed **16.** Develop skills in negotiating within a team	**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 – 3.3.4
17. Develop skills in the management of time, equipment and environment to ensure efficiency, efficacy and safety at all times.	**Utilize resources efficiently & effectively:** 4.2.1 **Ensure a safe practice environment:** 4.3.1 – 4.3.4 **Manage practice information safely & effectively:** 4.6.4

Learning objectives	Milestones
18. Develop and use an evidence-informed approach to address clinical questions related to neuro-rehabilitation **19.** Apply and integrate self-assessment and reflective learning	**Use an evidence-informed approach:** 6.1.1 -6.1.4 **Engage in scholarly inquiry:** 6.2.1 – 6.2.4 **Integrate self-reflection & external feedback to improve personal practice:** 6.3.1 - 6.3.4 **Contribute to the learning of others:** 6.5.3
20. Demonstrate behaviors that are consistent with the professional role of physiotherapist at all times (i.e. during lectures, labs, CRWs, site visits)	**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 fall neuro 551 course focuses on important **fundamental knowledge** and **components of a neurological assessment. Several neurological conditions** which mainly **do not involve cognitive dysfunctions** will be covered. **Basic treatment skills and handling** will be covered in most labs as well some **specific approaches/techniques and modalities will be included.** The course is organized into 4 modules which generally but not always follow in chronological order.

Module 1: **Foundational knowledge & fundamentals** (weeks 1-3)

- Frameworks for neurological rehabilitation and models of clinical reasoning
- Neuro assessment and SOAPIE format
- Concepts and application of evidence-informed practice
- Normal development and movement acquisition across the lifespan
- Motor control and Motor learning principles

Module 2: **Neuro-Assessment components** (weeks 4-8)

- Control, assessment and management of balance and posture
- Control, assessment and management of mobility and gait functions
- Basic sensory assessment
- Assessment of muscle tone
- Assessment of motor coordination

Module 3: **Specific adult conditions** (weeks 4-5, 9-10, 12)

- Abnormal aging/frailty (primarily related to falls),
- Neuromuscular diseases (Guillain Barré, Post-Polio Syndrome) and neuro-degenerative conditions (Multiple Sclerosis, Amyotrophic Lateral Sclerosis)
- Spinal Cord Injury

Module 4: **Specific Treatment** (weeks 4-6, 9-12, 13)

- Basic treatment skills using task-oriented approach for balance, functional mobility and gait
- Specific "hands-on" techniques - Proprioceptive Neuro-Facilitation (PNF).
- Basics of using electrical stimulation for PT assessment/treatment

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

Course Materials:

- **Required:**
  1. **PHTH 551 *Coursepack / Lab Manual***. Available on myCourses.
  2. Shumway-Cook, A. and Woollacott, M. (2016). ***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 material*** available on MyCourses for labs and CRW.

  ***** These texts are also the required books for winter term PHTH 561

- **Recommended:**
  1. Umphred, D.A. (2013) (Ed.) *Neurological Rehabilitation.* St. Louis: Mosby Elsevier.
  2. Supplementary readings available on MyCourses

Your 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.

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.

Copyright of course materials: Instructor generated course materials (e.g., **course pack, handouts, 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.

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.

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).

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Student Assignment and Evaluation:

Assignment/Evaluation	Value	Due Date	Objectives & Milestones Assessed
2 Written SOAPIE reports on clinical shadowing	1% (formative) 4%	TBA	3, 6, 8-10, 14, 15
5 Reading Assessment Tests (RAT)	(2.5% each) 12.5%	Oct 1, Oct 8, Oct 22, Oct 29, Nov 12	7, 8, 18, 19
Test 1 (individual + team)	12.5%	Oct 20	1-6, 16, 18-19
Test 2 (individual + team)	12.5%	Nov 24	4-6, 16, 18-19
Group EIP Project – video presentation; live Q&A	12.5%	Nov 3	5, 16-19
4 Individual assignments/ short answers	15%	TBA	1-14, 18-19
Mock OSCE	0% (formative)	Oct 27	5-13, 15, 17, 19, 20
Final Objective Structured Clinical Examination (OSCE)	30%	Dec 10	5-13, 15, 17, 20

***The content and/or evaluation scheme in this course is subject to change.**

***Updates will be posted in the beginning of the Fall term.**

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.

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.

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.

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.

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.