

## POTH 612 ADVANCED RESEARCH METHODS

**Credits:** 3

**Pre-requisite:** **(Recommended)** An introductory course in research methods and a course in intermediate level statistics or equivalent.

**Lecturers:** André Bussières, Liliane Asseraf-Pasin, Pamela Harrison, Heather Lambert, Nancy Mayo, Barbara Mazer, Anita Menon, Anik Nolet, Judith Soicher

**Course Description:** This multi-module course is geared to intermediate–advanced learning levels to help students design and implement research projects and analyze results according to the needs of their Master’s research project.

**Expanded Course Description:** This course is made up of several introductory lectures, followed by modules targeting different aspects of research design and implementation. The topics covered may include: cross sectional surveys, systematic reviews and meta-analysis, qualitative methods, knowledge translation, quantitative data analysis, qualitative analysis, ethics and measurement. Topics may also include experimental / laboratory methods in rehabilitation, depending on instructor expertise and the specific group projects being carried out. Students will be assigned by their project supervisor to specific design (Block 1) and analysis (Block 3) modules, according to the knowledge and skills required for the project. For the remaining blocks, all students will participate in lectures and workshops on topics in Project Development (Block 2), Measurement and Data Management (Block 4), and the Research Proposal (Block 5). Different modules may be offered each year.

**Course Structure:** There will be two 1.5-hour in-class sessions per week. Each module consists of 3-7 sessions. In the design module, one session will be devoted to a literature search workshop given by the liaison librarian.

There is also an open time period on Wednesday from 2:30-5:30. On one occasion, this time is being used for 1.5-hour workshop on reference management (EndNote). During other weeks, students may use this time for research group meetings.

**Learning Outcomes:** On completion of this course the student will have achieved the following objectives:

Scholarly Practitioner:

1. Formulate objectives to answer clinical or research questions that will contribute to evidence-based practice.
2. Understand the principles and potential bias of observational and experimental study designs, and apply these principles to published research articles.
3. Carry out a comprehensive literature review on a topic pertaining to rehabilitation research or practice, using appropriate databases and other resources.
4. Understand and apply the appropriate study design to answer a research question. Designs may include systematic review, cross-sectional survey, knowledge translation or qualitative studies.
5. Plan and apply methods of quantitative or qualitative data analysis, using the appropriate statistical test or interpretative method based on the research question and type of data.
6. Describe ethical principles and procedures related to clinical research.
7. Understand and apply measurement terminology, classification, conceptual frameworks (e.g. ICF) and the selection of appropriate measures for clinical or research purposes.
8. Evaluate the practical aspects and metric properties of an outcome measure.
9. Understand and apply basic principles of data management using appropriate software.
10. Integrate aspects of design, analysis, and measurement in order to write a research proposal for the Master's Project.

Communicator:

1. Describe in a clear and comprehensive manner aspects of the research project, using verbal and written forms of communication.
2. Understand and use relevant information and communication technologies for the research project (e.g. databases, software).

Collaborator:

1. Work collaboratively in intra- and/or inter-professional research teams.

**Course Content:** Detailed content and specific learning objectives will be distributed at the beginning of each module. A brief synopsis of the content of each module is presented below.

**Cross-sectional surveys:** Asking survey questions; designing successful surveys; survey sampling; survey modes (self-administered and mailed surveys; telephone and in person interviews); measuring survey reliability and validity; analysis of survey data. **Note: this module will not be given in 2014; essential content will be delivered in Measurement module.**

**Systematic Reviews and Meta Analysis:** The systematic review process; strengths and limitations of the method; formulation of the review question; search for the literature evidence; quality assessment of studies; data extraction; meta analytic methods; report writing.

**Qualitative methods (Part I):** Traditions and methodologies in qualitative research; sampling methods; designing data collection strategies; trustworthiness; documentation of qualitative research.

**Knowledge Translation (KT):** This module focuses on the gap between research evidence on "best practice" and actual clinical practice. It includes a discussion of the facilitators and barriers that influence the gap; discusses effective and non-effective KT strategies that can be used in clinical settings to change practice; describes the "how to" when designing a KT intervention study; includes a description of how to assess the quality of clinical practice guidelines; and summarizes the newer tools such as the PERFECT and the EPIC that measure clinician readiness for change.

**Quantitative Data Analysis:** Types of numerical data; underlying construct of the test or measure used; uses of statistics; matching the analysis to the measurement scale of the key variables; interpreting numerical data in clinical rehabilitation studies; presenting the results in a clear and meaningful manner; the art and science of tables of results.

**Qualitative Methods (Part II):** Formulating qualitative interview questions; conducting an interview; analyzing data using the constant comparative method; developing a concept map based on findings; transcribing data and using N-Vivo software to code data; introduction to narrative analysis; exploring concepts of triangulation.

**Measurement:** Review of research principles in context of measurement; classification of measures; selection of measures for research or clinical purposes; content development for measurement scales; translation and

cultural adaptation of scales; metric properties (reliability; validity, responsiveness, interpretability); critical appraisal of articles reporting a measurement study.

**Research Proposal:** In this module, students will develop a research proposal (or protocol) for their Master's project along with accompanying consent forms and appendices if necessary. Students will work with members of their supervisory committee in conjunction with the course coordinators and liaison librarian to complete the proposal.

**Required Texts:** No text is required for this course. Each instructor will provide students with a reading list containing articles and/or chapters available online. Readings from the recommended texts may also be assigned.

**Recommended Texts:**

Butler-Kisber, L. (2010). Qualitative Inquiry: Thematic, Narrative and Arts-Informed Perspectives, Sage Publications Ltd.

Portney, L.G. & Watkins, M.P. (2004). Foundations of Clinical Research: Applications to Practice. Appleton and Lange; Prentice Hall.

**Copyright of course materials:** Instructor generated course materials (e.g., handouts, notes, summaries, exam questions, 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 Evaluation:** Evaluation of learning will be ongoing throughout the term and will include both formative and summative evaluations. Evaluations for Block 1 and Block 3 will each be worth 25% of the final course grade. The evaluation for Blocks 2, 4 and 5 will be the Research Proposal assignment worth 50%. Evaluation guidelines will be provided in each block. Different evaluation methods will be used depending on the content of the module and number of students enrolled in the module. These methods may include a thematic paper, a critical appraisal of a methodological paper, written in-class or take-home exams, group or individual presentations, and peer or self-reflective evaluation.

**Mark Distribution:** Specific evaluation breakdown will be provided on the first day of each module.

**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 [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/) 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 site [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/)).

**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.

*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).*

**Dress Code:** Students are expected to demonstrate professional behaviour and wear appropriate attire at all times, in accordance with clinical sites specific regulations.

**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. email, msn, sms). Your cell phone should be on silence 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.

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