



PHTH 564 INTEGRATED CARDIORESPIRATORY REHABILITATION

Credits: 3

PREREQUISITES: Successful completion of PHTH 554 Physical Therapy - Cardiorespiratory Rehabilitation, given in the fall semester.

**Instructors/
Course Coordinator:** Jadranka Spahija, PT PhD (lectures/labs)

Other Instructors: Mariane Bertagnolli PT, PhD (Lectures/labs), Nicholas Bourgeois PT, PhD candidate (Lecture/labs), Juliette Lord PT (labs), Natali Mahdavian PT (Labs), Marc-Antoine Rouillier PT (Labs).

Access to the Instructors: Available by email or for meetings (virtual or in-person) by appointment.

Jadranka Spahija: Hosmer 300
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Mariane Bertagnolli: Hosmer 305
E-mail: mariane.bertagnolli@mcgill.ca

Course Description:

This three-credit course builds on previously learned knowledge of cardiorespiratory physiotherapy. In this second course, students will gain conceptual and procedural knowledge and skills for the physiotherapy assessment and management of patients with various cardiovascular and respiratory conditions, patients undergoing lung/heart-lung transplantation, and critically ill patients managed in the intensive care unit (ICU). This course aims to enhance critical thinking and problem-solving skills in the area of cardiovascular and respiratory physiotherapy through interactive lectures as well as case-based labs run at the McGill Simulation center.

Course Structure:

The course consists of one 2-hour lecture per week and one 3-hour in-person practical laboratory session/clinical reasoning workshop per week. A more detailed course schedule is posted on

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MyCourses at the start of term. Students are encouraged to consult MyCourses regularly for announcements, course updates and other pertinent information.

Instructional Method: The learning activities will be delivered in-person. Lecture/ lab content and any instructional videos used in the course will be posted on myCourses. Students will be expected to watch all the videos prior to their respective labs. Students are also encouraged to use the myCourses Discussion Forum for peer- and instructor support. Note that instructional methods are subject to change based on public health protocols.

A polling system, called Slido may be used at times in this course to enhance student engagement and increase interaction.

- When used, this live-polling system allows the instructor to ask questions and students answer from a personal device (smartphone, tablet, or laptop).
- Students should come to class with their devices charged and connected to the Internet.
- Polling will be available through <http://www.mcgill.ca/polling>.
- To participate in a Polling session, you will be provided with a QR code that can be scanned or a Slido code that can be entered [here](#). If you are asked to Login with SSO (Single Sign-On), enter your McGill credentials and follow any Two-Factor Authentication prompts. For more information, please visit the Getting Started for Students section at <http://www.mcgill.ca/polling>.
- For any technical problems with polling, please contact the [IT Service Desk](#).
- If you do not have a phone, tablet, or laptop to use to respond to polling questions, please contact the instructor immediately in order for appropriate arrangements to be made.
- To maintain a safe and respectful classroom environment, please ensure that any polling and Q & A responses you submit are appropriate and relevant to the question asked. Please note that unless the poll is labelled as anonymous, your responses are identifiable to the instructor. Please see the Code of Student Conduct and Disciplinary [Procedures](#).

Recordings of Sessions: All lecture sessions will be recorded and made available for viewing on myCourses. By remaining in sessions that are recorded, you agree to the recording, and you understand that your image, voice, and name may be disclosed to classmates. You also understand that recordings will be made available in myCourses to students registered in the

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course. Please consult me if you have concerns about privacy and we can discuss possible measures that can be taken.

Expectations for Student Participation: Students are expected to attend all weekly in-person or fixed (synchronous) online lectures. Students are also expected to attend all in-person labs and CRWs unless they obtain prior approval from the course coordinators or have a University accepted reason for not participating (see attendance policy below). Attendance will be taken for all in-person labs.

Student Learning Objectives:

This course will cover essential competencies and milestones related to the domains of Physiotherapy Expertise, Communication, Collaboration, Management, Scholarship, and Professionalism. Upon completion of this course, the student will be able to:

Learning objectives	Milestones
Recognize the cardiovascular, respiratory and physical dysfunction including pathophysiological mechanisms, etiology, and clinical presentation of patients with cardiovascular disease, those undergoing surgery and patients requiring physiotherapy treatment in the critical care setting;	Foundational Knowledge
Perform a cardiorespiratory assessment/evaluation involving a comprehensive multisystem assessment with emphasis on the cardiovascular and respiratory systems and to integrate this information with relevant musculoskeletal and neurological assessment findings;	1.1.2; 1.1.5; 1.1.6; 1.3.1; 1.3.3; 1.3.4; 1.3.5; 1.3.7
Re-evaluate, modify or progress the intervention plan, treatment program and goals using appropriate clinical evaluation tools and outcome measures to monitor the patient’s response and/or change in clinical status;	1.4.1; 1.4.3; 1.4.5; 1.5.5; 1.5.6;1.5.7
Learning objectives	Milestones
Identify the lines, leads and equipment used in the critical care setting; explain their function and any precautions or treatment modifications that need to be taken;	1.1.2; 1.1.5; 1.2.1; 1.2.2; 1.2.3; 1.2.5; 1.3.5
Demonstrate an understanding of the ventilator modes and settings and how they impact the patient’s physical therapy plan of care;	1.1.2; 1.1.5; 1.2.1; 1.1.2; 1.2.3; 1.3.5;

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	1.5.1.; 1.5.2; 1.5.3; 1.5.5
Describe the actions of common cardiovascular medications and those used in the ICU and appraise the implication for PT interventions;	1.2.1; 1.2.3; 1.5.1; 1.5.2; 1.5.5; 1.5.6
Develop a prioritized problem list using the International Classification of Functioning, establish a physiotherapy clinical impression and formulate cardiorespiratory treatment goals demonstrating sound clinical reasoning and problem-solving skills.	1.2.1; 1.4.1; 1.4.2; 1.4.3; 1.4.5; 1.4.6; 1.5.1; 1.5.2
Formulate and implement an appropriate and effective physiotherapy treatment plan for patients with cardiovascular, respiratory and critical illness and those undergoing surgery, with skill and competence, using sound clinical reasoning, evidence-based practice and demonstrating safety for the patient and to self;	1.1.5; 1.2.2; 1.2.3; 1.5.1; 1.5.2; 1.5.3; 1.5.5; 1.5.6; 1.5.7
Provide the patient with relevant information throughout care, obtain ongoing informed consent, and involve them in the decision-making.	1.1.2; 1.1.3; 1.1.4; 1.1.5; 1.1.6; 1.3.2
Recognize when to notify another team member in the event of an acute deterioration in patient status.	1.3.6; 1.4.6
Choose an effective and appropriate communication style when performing a cardiorespiratory assessment or treatment, with consideration to the patient's medical condition, cognition, emotional status, culture and communication needs	2.1.1; 2.1.2; 2.1.3; 2.1.4; 2.2.1; 2.3.1; 2.3.2; 2.3.3; 2.3.4
Demonstrate good verbal communication skills when communicating assessment results, clinical impression, treatment goals and intervention plans to the patient, family and other members of the interprofessional medical team;	2.1.1; 2.3.1; 2.3.2; 2.3.3; 2.3.4; 2.3.5
Learning objectives	Milestones
Demonstrate good written communication skills and knowledge of general documentation guidelines for cardiorespiratory charting in different clinical settings (using the SOAPIE framework).	2.2.1; 2.2.2; 2.2.3
Collaborate with the interprofessional team to create an environment that eliminates barriers and facilitates safe and effective cardiorespiratory services that are coordinated with medical interventions and delivery of medications.	3.1.1; 3.1.2; 3.2.1; 3.3.2; 3.2.4; 3.2.5;

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	3.3.1; 3.3.2; 3.3.3.; 3.3.4
Manage and resolve conflicts in a timely, respectful and collaborative manner.	3.4.1; 3.4.2
Practice in a safe and secure manner that minimizes risk to clients, self and others;	4.3.1; 4.3.3; 4.3.4
Identifying patient-specific precautions, contraindications or risks to particular respiratory therapeutic and exercise interventions;	4.3.1; 4.3.3; 4.3.4
Demonstrate the capacity to manage time and priorities, safely, in both individual and overall practice in cardiorespiratory rehabilitation.	4.2.3;
Implement an evidence-based care plan and communicate it in a manner that advocates for quality of care in the acute and critical care setting (eg. patients' early mobilization).	5.1.3; 5.2.2; 5.3.2;
Identify the needs and concerns of individual clients to be able to advise and motivate them to adopt behaviors to promote good health, functioning and participation within the population	5.1.2; 5.3.1;
Use a reflective and evidence-informed problem-solving approach to make decisions and provide PT interventions.	6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5; 6.2.3
Demonstrate a professional and respectful attitude when interacting with patients as well as with peers and other professionals involved in the course.	7.4.1; 7.4.3; 7.4.5; 7.4.6

Course Content:

Lectures

- Surgery: Effects of anesthesia, patient-related risk factors, thoracic surgery procedures, chest tubes, perioperative physiotherapy management, lung transplantation
- Critical Care I: Hemodynamic monitoring, catheters, oxygen delivery,
- Critical Care II: Respiratory failure, mechanical ventilation
- Critical Care III: Sepsis, ARDS, effects of bed rest and immobility, medications in the ICU setting
- Critical Care IV: Assessment and treatment of the ICU patient
- Cardiovascular System: anatomy, physiology, mechanics, hemodynamics, conduction system/ neural control
- Lifestyle/acquired cardiac conditions: Atherosclerosis, coronary artery disease (CAD), hypertension, obesity, dyslipidemia, diabetes, lipid profile, cardiac enzymes
- Electrical activity of the heart: ECG analysis

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- Cardiac interventions & surgery: angioplasty, atherectomy, stents, coronary artery bypass grafts (CABG), valve repair/replacements, heart transplant, cardiac assistive devices
- Cardiac disease I: Myocardial ischemia / infarction, heart failure
- Cardiac Disease II: Valve disease, pericarditis, myocarditis, endocarditis, cardiomyopathies
- Cardiac interventions and surgery: Angioplasty, atherectomy, stents, coronary artery bypass grafts (CABG), valve repair/replacements, heart transplant, cardiac assistive devices: intra-aortic balloon pump, ventricular assist devices, mechanical hearts
- Peripheral arterial disease (PAD), Abdominal aortic aneurysm (AAA), chronic venous insufficiency
- Cardiac medications (reading)
- Phase 1 cardiac rehab: Mobilization, positioning, transfers

Practical sessions

- McGill Simulation Center/SPOT
 - Devices for oxygen delivery
 - Oral/ nasal endotracheal, tracheostomy and nasopharyngeal suctioning (gloving, sterile field, closed system etc.)
 - Mechanical ventilation: modes, FiO₂, waveforms, alarms, cuff pressures and leaks
 - High-fidelity simulation ICU patient: lines and leads, monitoring, auscultation
 - Modified manual muscle testing for ICU: Medical Research Council (MRC) sum score
 - Assessment of level of consciousness, delirium, cognitive function
 - Physiotherapy treatment of the mechanically ventilated patient (positioning, breathing exercises, manual techniques, bed mobility, mobilization out of bed)
 - ECG interpretation, heart sounds
 - Case studies (pulmonary, critical care, surgical, medical and cardiac, peripheral vascular disease)

Course Materials:

- Student will need to have access to a computer and internet to be able to view and download content from MyCourses, to complete the online quizzes and assignments, and to participate in the remote fixed zoom sessions and live polling.
- **Required text:** Reid, W.D., Chung, F. and Hill K. (2014). Cardiopulmonary physical therapy: Management and case studies, (2nd ed.). Thorofare, NJ: Slack Inc.

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- **Reference texts:**

DeTurk, W.E., Cahalin, L.P. (2018). *Cardiovascular and pulmonary physical therapy: An evidence-based approach*, (3rd ed). New York: McGraw-Hill.

Frownfelter, D. & Dean, E. (2023). *Cardiovascular and pulmonary physical therapy: Evidence and practice*, (6th ed.). St. Louis, Missouri: Elsevier.

Hillegass, E.A. (2022). *Essentials of cardiopulmonary physical therapy*, (5th ed). St. Louis, Missouri: Elsevier)

Hough, A. (2018) *Hough’s Cardiorespiratory Care: an evidence-based, prblem-solving approach* (5th ed.), Elsvier Ltd.

Main E. and Denehy, L. (2016) *Cardiorespiratory physiotherapy: Adults and Paediatrics* (5th ed.), Elsvier Ltd.

West, J.B. (2011). *Respiratory physiology: The essentials*, (9th ed.). Baltimore: Williams & Wilkins.

West, J.B. (2017). *Pulmonary pathophysiology: The essentials*, (9th ed.). Baltimore: Williams & Wilkins.

- **Required equipment:** A stethoscope and a watch with a second hand.

Student Assignment and Evaluation: Students are evaluated by their performance in two components:

Assignment/ Evaluation	Value	Due Date	Milestones Assessed
<i>Theoretical:</i> <ul style="list-style-type: none"> • Pre-lab preparatory assignments (1) 	5%	Jan 18 th , 2024	1.2.1; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.2; 1.4.3;1.4.4; 1.4.5; 1.4.6; 1.5.1; 1.5.2; 1.5.4; 1.5.5; 1.5.7; 1.6.1 1.6.2; 2.2.1; 2.2.2; 2.2.3; 2.3.2; 3.2.2; 3.3.1; 3.3.2; 3.3.3.; 3.3.4; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5
<ul style="list-style-type: none"> • Graded group assignments (3) 	15%	Feb. 2 nd , Feb. 28 th , March 21 st , 2024	1.2.1; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.2; 1.4.3;1.4.4; 1.4.5; 1.4.6; 1.5.1; 1.5.2; 1.5.4; 1.5.5; 1.5.7; 1.6.1 1.6.2; 2.2.1; 2.2.2; 2.2.3; 2.3.2; 3.2.2; 3.3.1; 3.3.2; 3.3.3.; 3.3.4; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5
<ul style="list-style-type: none"> • Quizzes (5) 	10%	Week of: Jan 15 th , Jan 29 th , Feb 19 th , March 11 th , March 25 th , 2024	1.2.1; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.2; 1.4.3; 1.4.5; 1.4.6; 1.5.1; 1.5.2; 1.5.3; 1.5.5; 1.5.6; 1.5.7; 1.6.1; 2.3.2; 3.1.1; 4.3.1; 4.3.3; 4.3.4; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5; 6.2.4; 6.3.3

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<ul style="list-style-type: none"> • Mid-term exam 	20%	TBD (Week 7)	1.2.1; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.2; 1.4.3; 1.4.5; 1.4.6; 1.5.1; 1.5.2; 1.5.3; 1.5.5; 1.5.6; 1.5.7; 1.6.1; 2.3.2; 3.1.1; 4.3.1; 4.3.3; 4.3.4; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5
<ul style="list-style-type: none"> • Final written exam 	20%	TBD (Final exam period)	1.2.1; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.2; 1.4.3; 1.4.5; 1.4.6; 1.5.1; 1.5.2; 1.5.3; 1.5.5; 1.5.6; 1.5.7; 1.6.1; 2.3.2; 3.1.1; 4.3.1; 4.3.3; 4.3.4; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5
<i>Practical:</i> <ul style="list-style-type: none"> • Final practical (OSCE) exam 	30%	April 12 th , 2024	1.1.2; 1.13; 1.14; 1.1.5; 1.1.6; 1.2.1; 1,2,2; 1.2.3; 1.2.4; 1.2.5; 1.3.1; 1.3.2; 1.3.3; 1.3.4; 1.3.5; 1.3.6; 1.3.7; 1.4.1; 1.4.3; 1.4.5; 1.5.1; 1.5.2; 1.5.3; 1.5.4; 1.5.5; 1.5.6; 1.5.7; 1.6.1; 2.1.1; 2.1.2; 2.1.3; 2.1.4; 2.3.1; 2.3.2; 2.3.3; 2.3.4; 2.3.5; 4.2.3; 4.3.3; 6.1.1; 6.1.2; 6.1.3; 6.1.4; 6.1.5; 7.4.1; 7.4.5; 7.4.6

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

Copyright: © Instructor generated course materials (e.g., 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.

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.

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Attendance: Attendance at all labs and clinical reasoning workshops is mandatory. Students who have missed more than 10% of laboratory or small group sessions, or who miss any required professional workshop or seminar, without prior approval, will have 10% of the total mark of the course removed.

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](#)” (Approved by Senate on 29 January 2003) (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 procédures disciplinaires](#) » (Énoncé approuvé par le Sénat le 29 janvier 2003) (pour de plus amples renseignements, veuillez consulter le guide pour l’honnêteté académique de McGill [guide pour l’honnêteté académique de McGill.](#)) »

Language of submission: 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 [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.

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 will receive a 0 in that portion of the evaluation. Assignments submitted late will be graded but will receive a deduction of 5% per day, including weekends.

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

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wear comfortable shorts or pants and a T-shirt or tank top for in-person practical laboratory sessions.

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., texting, emailing, chats, messaging, scrolling through social media, online shopping, etc). Your cell phone should be on silent during class time and phone calls should only take place during the break or after class.

Student Accessibility: We endeavor to provide an inclusive learning environment. If you require an adapted learning environment (for in class and during exams), please contact the Student Accessibility and Achievement Office as soon as possible so arrangements can be made. You may also contact your instructor(s) if you wish but are not obliged to do so.

Mercury course evaluations: [Mercury 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.

Land recognition: McGill University is on land which long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.

Inclusive learning environment: As the instructor of this course, I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and/or Student Accessibility and Achievement.

Respect: The University is committed to maintaining teaching and learning spaces that are respectful and inclusive for all. To this end, offensive, violent, or harmful language arising in course contexts may be cause for disciplinary action.

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Wellness: Many students may face mental health challenges that can impact not only their academic success but also their ability to thrive in our campus community. Please reach out for support when you need it; [wellness resources](#) are available on campus, off campus, and online.

Workload management skills: If you are feeling overwhelmed by your academic work and/or would like to further develop your time and workload management skills, don't hesitate to seek support from [Student Services](#).

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.

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