

**McGill University**  
**Department of Kinesiology & Physical Education**  
**EDKP 485: Cardiopulmonary Exercise Pathophysiology (3 credits)**  
**Course Outline, Winter 2022**

---

### **INSTRUCTOR**

Prof. Dennis Jensen, PhD

Office address: Currie Memorial Gymnasium, 475 Pine Avenue West, Room A223

Phone: 514-398-4184 ext. 0541

E-mail: [dennis.jensen@mcgill.ca](mailto:dennis.jensen@mcgill.ca)

Office hours: Held virtually *via* Zoom or in-person and by appointment only. Contact Prof. Jensen by email for appointment

### **GRADERS**

Ahzum Mujaddid, [ahzum.mujaddid@mail.mcgill.ca](mailto:ahzum.mujaddid@mail.mcgill.ca)

Felix Girard, [felix.girard@mail.mcgill.ca](mailto:felix.girard@mail.mcgill.ca)

Office hours: As graders, Ahzum and Felix are not responsible for holding office hours; however, students can email them to request clarification on any assignment(s) they graded. Any contentious issues/disputes concerning the grading of an assignment and/or disrespectful interaction with Ahzum or Felix will be managed by Prof. Jensen.

### **LECTURE DAYS, TIME, FORMAT & LOCATION**

- Tuesdays and Thursdays from 2:35-3:55 pm EST
- Due to the extraordinary circumstances of COVID-19, the course will be delivered online *via* Zoom until January 23<sup>rd</sup> or later (TBD), depending on government and/or university directives.
- Starting the week of January 24<sup>th</sup> or later (TBD), in-person lectures will be held in Room 408/9 of the Currie Memorial Gymnasium, Department of Kinesiology and Physical Education, 475 Pine Avenue West, H2W 1S4.
- Refer to “*Course Schedule & Content*” section below for more details.

### **COURSE DESCRIPTION**

Generally speaking, this course will review the exercise pathophysiology of selected respiratory and cardiovascular disease states, including chronic obstructive pulmonary disease (COPD), asthma, coronary artery disease (CAD) and chronic heart failure (CHF). More specifically, this course will focus on the integrated physiological and perceptual responses to acute and chronic exercise in COPD, asthma, CAD and CHF.

### **COURSE OBJECTIVES**

1. To better understand the essential elements of the underlying pathophysiology of COPD, asthma, CAD and CHF.
2. To better understand the impact of COPD, asthma, CAD and CHF on physiological and perceptual responses to acute exercise.
3. To better understand the effects of therapeutic interventions, namely exercise training, on physiological and perceptual responses to exercise in COPD, asthma, CAD and CHF.
4. To develop an appreciation for the role of clinical cardiopulmonary exercise testing (CPET) in evaluating the impaired function of various physiological support systems; evaluating a patients’ response to therapy; etc.
5. To expose students to a systematic approach to analyze and interpret CPET results.
6. To provide students with an opportunity to review and critique research articles in the field of clinical exercise physiology.

## READINGS & RESOURCES

- There is no required textbook(s) for this course, although a list of potentially helpful textbook resources is provided below.
- Copies of original research articles, topical review articles, and/or textbook chapters relevant to the content covered in lecture will be posted to the EDKP 485 *MyCourses* site.
- To help prepare their assignments, students will be required to search and access additional scientific material from the library, through the McGill library website, through PubMed (<http://www.ncbi.nlm.nih.gov/pubmed/>) and/or Google Scholar (<https://scholar.google.ca/>).

\*\*Students are strongly encouraged to contact Prof. Jensen about how to gain electronic access to the textbook resources listed above, including copies of research articles not available online via the McGill library website, PubMed and/or Google Scholar.

### **Textbook resources (not required & listed in the order of importance to the lecture content):**

1. Wasserman K, Hansen JE, Sue DY, Stringer WW, Sietsma KE, Sun XG & Whipp BJ. Principles of Exercise Testing and Interpretation: Including Pathophysiology and Clinical Applications, 5<sup>th</sup> Edition. Lippincott Williams & Wilkins, New York, NY, USA, 2012.
2. Jones NL. Clinical Exercise Testing, 4<sup>th</sup> Edition. WB Saunders Company, Philadelphia, Pennsylvania, USA, 1997.
3. Ehrman JK, Gordon PM, Visich PS & Keteyian SJ. Clinical Exercise Physiology, 4<sup>th</sup> Edition. Human Kinetics, Windsor, ON, Canada, 2019.
4. ACSM's Advanced Exercise Physiology, 2<sup>nd</sup> Edition. Editors: Farrell PA, Joyner MJ & Caiozzo VJ. Wolters Kluwer, Lippincott Williams & Wilkins, New York, NY, USA, 2012.

## COURSE EVALUATION (\*there are no quizzes or exams\*)

COMPONENT	WEIGHT
1. Journal Article Review Assignment 1 - COPD	7.5%
2. Journal Article Review Assignment 2 - CHF	7.5%
3. Case Study Report 1 – Pulmonary Disease	15%
4. Case Study Report 2 – Cardiovascular Disease	15%
5. Case Study Report 3 – Cardiovascular Disease	15%
6. Term Paper	40%

Unless otherwise instructed, **assignments must be submitted electronically to [dennis.jensen@mcgill.ca](mailto:dennis.jensen@mcgill.ca) by the dates and times listed in the green cells of the “EVALUATION COMPONENTS” table on Pages 3-4 below.** Assignments can be submitted in any file format, so long as it can be opened with most computer operating systems. However, the preferred format for submission of all assignments is .DOCX because it allows for editing with track changes. Prof. Jensen will confirm receipt of the assignment by reply email within 24 hours.

**No deadline extensions will be granted**, although valid exceptions such as illness may be considered and require supporting documentation (e.g., doctor's note). If a student feels there are extenuating and/or extraordinary circumstances beyond their control that prevent them from submitting their report by the deadline, they should advise Prof. Jensen as early as possible so that reasonable and equitable help/accommodations may be considered. **Supplementary assignments for a higher final grade will not be considered.**

EVALUATION COMPONENTS:		
<p><b>Components 1 &amp; 2</b></p>	<p><b>Value:</b> 7.5% each (15% total)</p>	<p><b>Submission deadlines:</b>  <u>Journal Article Review Assignment 1:</u> No later than 11:59:59 pm EST on <b>Thursday, February 3<sup>rd</sup></b>  <u>Journal Article Review Assignment 2:</u> No later than 11:59:59 pm EST on <b>Thursday, March 31<sup>st</sup></b></p>
<p><b>Journal Article Review Assignments 1 &amp; 2</b></p>	<p>The purpose of the journal article review assignment is for students to read, critically evaluate and summarize the results of an original research article on some aspect of exercise pathophysiology in people with COPD or CHF. The articles are pre-selected by Prof. Jensen and supplement the material covered in lecture.</p> <p><b>Assignments must be written individually.</b> Students are expected to read the article; summarize the rationale for the study, including its working hypothesis; summarize the main findings of the study; identify the strengths and critique the weaknesses of the study; and identify the clinical implication(s) of the study.</p> <p>Reports must be <b>1 single-spaced page</b> in length and organized according to instructions provided by Prof. Jensen.</p> <p>Reports will be marked on a Pass/Fail basis. Please note, however, that Prof. Jensen and his graders reserve the right to deduct marks due to poor perceived effort.</p>	
<p><b>Components 3, 4 &amp; 5</b></p>	<p><b>Value:</b> 15% each (45% total)</p>	<p><b>Submission deadlines:</b>  <u>Case Study 1:</u> No later than 11:59:59 pm EST on <b>Thursday, February 17<sup>th</sup></b>  <u>Case Study 2:</u> No later than 11:59:59 pm EST on <b>Thursday, March 17<sup>th</sup></b>  <u>Case Study 3:</u> No later than 11:59:59 pm EST on <b>Tuesday, April 12<sup>th</sup></b> (<i>with no possible exceptions</i>)</p>
<p><b>Case Study Assignments 1, 2 &amp; 3</b></p>	<p>It is likely that, as part of their future professional responsibilities, many students will need to apply the knowledge gained in EDKP 485 to the interpretation of cardiopulmonary exercise tests results from an individual person or clinical case. With this in mind, the purpose of the case study assignments is for students to apply the knowledge acquired in EDKP 485 to the interpretation of clinical cardiopulmonary exercise test responses from an individual case referred for clinical evaluation.</p> <p><b>Reports must be written individually or in a group of no more than 2 students.</b> Both students in the group are expected to contribute equally to the work. Each group of 2 students will write</p>	

	<p>and submit one case study report and one grade will be awarded per group.</p> <p>Students will be provided with selected clinical findings and cardiopulmonary exercise test data/information on a single patient (or “case”) with pulmonary disease (report 1) or cardiovascular disease (reports 2 and 3). Students are expected to employ the systematic approach taught in class to analyze and interpret the clinical and exercise test results provided; and write a Case Study Report that is <b>≤2 single-spaced pages</b> according to the instructions provided by Prof. Jensen.</p>
<p><b>Component 6</b></p>	<p><b>Value:</b> 40%</p> <p><b>Submission deadlines:</b>  <u>Deadline for preliminary review of term paper by Graders – No later than 5:00 pm EST on Tuesday, March 22<sup>nd</sup>, although sooner is better for both students and Graders!</u></p> <p><u>Final submission deadline – No later than 11:59:59 pm EST on Tuesday, April 12<sup>th</sup> (with no possible exceptions)</u></p>
<p><b>Term Paper</b></p>	<p>The purpose of the term paper is for students to review the published literature and write a review article that is <b>no less than 12 and no more than 20 double-spaced pages in length (not including title page, tables, figures and references)</b> that summarizes the etiology, prevalence, burden, and acute cardiopulmonary exercise tests responses in people with one of the following pre-selected clinical conditions: obesity; pregnancy; spinal cord injury; or interstitial lung disease. These clinical conditions have been selected because there is considerable research published that compares the acute exercise responses relative to healthy controls</p> <p><b>Term papers must be written individually.</b> Students will choose for themselves which one of the four abovementioned clinical conditions to write their term paper on according to instructions provided by Prof. Jensen.</p>

## COURSE SCHEDULE & CONTENT

- The topics outlined in the table below are subject to change as the course dictates with prior notification. Students will be notified of such changes *via* email and/or an announcement posted to the EDKP 485 *MyCourses* site with as much advance notice as possible.
- Unless otherwise announced, lectures will be presented sequentially in real time *via* Zoom (until January 23<sup>rd</sup> or later [TBD]) or in-person (starting the week of January 24<sup>th</sup> or later [TBD]) during the scheduled lecture period (Tuesdays and Thursdays from 2:35-3:55 pm EST).
- Lecture slides and recordings will be made available to students through the EDKP 485 *MyCourses* site. Lecture slides will be posted in .PPTX and .PDF formats as far in advance of each scheduled lecture as possible. Unless problems arise, lecture recordings will be posted within 24 hours of the end of each scheduled class.
- Attendance is strongly encouraged, but not mandatory.

Week	Date	Topic	Date	Topic
1	--	--	January 06	Course introduction ( <i>via</i> Zoom)
2	January 11	Principles of CPET & Interpretation 1 ( <i>via</i> Zoom)	January 13	Principles of CPET & Interpretation 2 ( <i>via</i> Zoom)
3	January 18	Principles of CPET & Interpretation 3 ( <i>via</i> Zoom)	January 20	Principles of CPET & Interpretation 4 ( <i>via</i> Zoom)
4	January 25 (start of in-person teaching, unless otherwise notified)	Principles of CPET & Interpretation 5	January 27	Exercise Pathophysiology of COPD 1
5	February 1	Exercise Pathophysiology of COPD 2	February 3	Exercise Pathophysiology of COPD 3
6	February 8	Exercise Pathophysiology of COPD 4	February 10	Exercise Pathophysiology of COPD 5
7	February 15	Exercise Pathophysiology of Asthma 1	February 17	Exercise Pathophysiology of Asthma 2
8	February 22	In Class Review of Case Study 1	February 24	Exercise Pathophysiology of CAD 1
<b>Week of February 28 to March 04: McGill Study Break - NO CLASSES</b>				
10	March 08	Exercise Pathophysiology of CAD 2	March 10	Exercise Pathophysiology of CAD 3

<b>11</b>	March 15	Exercise Pathophysiology of CAD 4	March 17	Exercise Pathophysiology of CAD 5
<b>12</b>	March 22	Exercise Pathophysiology of CAD 6 (dyslipidemia)	March 24	Exercise Pathophysiology of CAD 7 (hypertension)
<b>13</b>	March 29	Exercise Pathophysiology of CHF 1	March 31	Exercise Pathophysiology of CHF 2
<b>14</b>	April 5	Exercise Pathophysiology of CHF 3	April 7	Exercise Pathophysiology of CHF 4
<b>15</b>	April 12	Exercise Pathophysiology of CHF 5	--	--

## 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/)). »

## 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, 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). »

## ADDITIONAL STATEMENTS

- ✓ The [University Student Assessment Policy](#) exists to ensure fair and equitable academic assessment for all students and to protect students from excessive workloads. All students and instructors are encouraged to review this Policy, which addresses multiple aspects and methods of student assessment, e.g. the timing of evaluation due dates and weighting of final examinations.
- ✓ 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 Dr. Jensen and the [Office for Students with Disabilities](#), 514-398-6009.
- ✓ [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.
- ✓ Mobile computing and communication devices are permitted in class insofar as their use does not disrupt the teaching and learning process.
- ✓ In the event of extraordinary circumstances beyond the University’s control, the content and/or evaluation scheme in this course is subject to change.
- ✓ Instructor generated course materials (e.g., lecture notes, handouts, 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.
- ✓ McGill University is on land which has 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.