Senate Committee on Academic Standards, Curriculum & Pedagogy

BASIC COURSE OUTLINE

Faculty of Health School of Kinesiology and Health Science

Course: KINE 4901 3.0 – Advanced exercise therapy: Chronic cardiovascular diseases

Course Term: Fall 2018-2019

Prerequisite / Co-requisite: HH/KINE 2011 3.0 Human physiology I, HH/KINE 3012 3.0

Human physiology II, Exercise physiology 4010 3.0

Course Instructor:

Emilie Roudier (416) 736-2100 ext 44312 Bethune College eroudier@yorku.ca

Course consultation hours:

Wednesdays between 9:00 to 11:00 by appointments only requested by email.

Time and Location:

Lectures M/ W 11:30-13:00 SC 224

Participation in class and online participation on Moodle

Expanded Course Description:

This course will guide the students through the evidence that support the use of exercise for the evaluation, the prevention and the improvement of conditions associated with cardiovascular diseases,

We will review the underlying mechanisms of atherosclerosis, a process at the origin of cardiovascular diseases, and discuss the risk factors promoting atherosclerosis before studying the impact of exercise on these mechanisms. Then the key concepts of clinical exercise physiology will be briefly presented. We will discuss few chronic cardiovascular diseases and conditions, including hypertension, coronary heart disease, heart failure, peripheral arterial diseases, and pulmonary hypertension. An in-depth analysis of the impact of exercise therapy on the physiopathology of chosen diseases will be performed using review articles and research articles. Through this detail analysis, students will gain a better understanding of how exercise can be used as a therapeutic approach.

An emphasis will be placed on the analysis of the experimental evidence from molecular and

integrative physiology whereby beneficial effect of exercise had been demonstrated. For each of these conditions, the course will:

- Give a global perspective on the given chronic condition
- Allow an in depth-analysis of the physiopathology of the given disease or condition
- Present the guidelines (when available) for the prevention, evaluation, management or treatment of the condition through exercise and the evidence at the basis of these guidelines
- Guide the students through the analyses of key research articles in the field
- Reorganise key features or data to create visual summaries under the format of a poster

Course Objectives:

(1) Brief statement of the purpose:

The purpose of this course is to guide student through the scientific evidence that exercise has therapeutic values to manage chronic cardiovascular disease. At the end of the course students will have gain skills to be able to critically analyse the literature related to the study of the effect of exercise on chronic diseases. This course also aims to help the students developing written communication skills to be able to transfer the knowledge gained from the analysis of the scientific literature to the general public to increase awareness about the effects of exercise on the chronic disease studied

(2) Brief list of specific learning outcomes of the course,:

- At the end of the course, the students will be able to:
- Discuss the molecular, cellular and physiological mechanisms by which chronic diseases or conditions alter the organism, and more particularly the vascular system.
- Evaluate how physical activity improve some specific features of the given chronic disease or condition through the interpretation of scientific data
- Recall the guidelines and describe the scientific evidence at the basis of these guidelines.
- Advocate for the use of exercise for the prevention, the testing or the management or treatment of chronic diseases or conditions using of evidencebased rationales.
- Combine the knowledge acquired through the analysis of scientific articles to create visual summary

Course Text / Readings:

<u>Textbook:</u> Required reading will be posted on Moodle and will include research and review articles.

Additional optional reading materials will be posted online on Moodle. This will include mostly research articles, review articles and parts of guidelines from scientific societies (e.g. American heart association, American college of cardiology, etc...). Students are responsible to follow Moodle announcement reading material to read before class.

Evaluation

• Participation: in-class discussion or online (discussion on 4 topics, 4x2.5%=10%):

For in-class discussion, students need to provide relevant questions or comments inclass session. Alternatively online participation will count for participation. 5 forums will be open around 4 themes. Student need to provide comments, questions or stimulate discussions The maximum grade per forum is 3%, students needs to demonstrate sufficient work and engagement in the forum discussion to obtain the maximum grade. For deadlines related to for a please check the Moodle course.

• <u>2 examinations (total of 40%)</u>. In-class examination one is worth 22% and in-class examination 2 18%. Students will answer 3-6 questions about the course material or a provided article. Questions will be mainly a sequence of short answers around themes discussed in class or online.

Assignment 1 (25%):

- Online reading response 1 (8%): Students will have to answer a series of questions about the required readings.
- Visual summary 1 (17%): Based on the required reading for reading response 1, Students will create 1 visual summary. The visual summary will be done on the format of a power-point slide or illustrator or similar software. Guidelines and table of evaluation for the visual summary will be provided online.

• Assignment 2 (25%):

- Online reading response 2 (8%): Students will have to answer a series of questions about the required readings.
- Visual summary 2 (17%): Based on the required reading for reading response 1, Students will create 1 visual summary. The visual summary will be done on the format of a power-point slide or illustrator or similar software. Guidelines and table of evaluation for the visual summary will be provided online.

Information about online assignment 1 & 2:

Two sets of articles are associated with the reading responses each corresponding to one visual summary. The questions of the reading response aim to guide the student in his readings and help the student identifying the important information.

- The reading response must be written in a Scientific English language and must provide accurate, precise and concise answers to the questions provided.
- The visual summary targets a general public or a population at high risks of cardiovascular diseases and must be written in a lay language. The student must summarize the most important or most striking information obtained for the required readings completed by additional literature search in a poster. The summary has to use visual cues to facilitate learning of the targeted public. Scientific data collected must remain exact, accurate and precise.

- Assignment 1: 5 articles about exercise and atherosclerosis:
 - Link to articles and questions in Moodle: https://moodle.yorku.ca/moodle/mod/folder/view.php?id=1772528
 - Link to upload assignment 1: https://moodle.yorku.ca/moodle/mod/turnitintooltwo/view.php?id=1772527
- Assignment 2: 4 articles about exercise and heart failure (focus on preserved ejection fraction):
 - Link to articles and questions in Moodle: https://moodle.yorku.ca/moodle/mod/folder/view.php?id=1772532
 - Link to upload assignment 2: https://moodle.yorku.ca/moodle/mod/turnitintooltwo/view.php?id=1772529

Important dates regarding evaluation:

Turn-it-in will be used for these assignments

Date of in-class examinations:

Examination 1 (in-class, 22%):
 Examination 2 (in-class, 18%):
 October 22nd, 2018
 November 28th, 2018

- Deadlines to submit assignments online using Moodle:
 - Assignment 1 (4 articles):

Reading response one (8%):
 Visual summary one (17%):
 September 23rd, 2018 11:55pm
 October 7th, 2018 11:55pm

o Assignment 2 '

Reading response one (8%):
Visual summary two (17%):
November 4th, 2018 11:55pm
November 18th, 2018 11:55pm

Academic integrity quiz:

Student will perform an academic integrity quiz before submitting their first assignment. https://moodle.yorku.ca/moodle/mod/quiz/view.php?id=1772377

Use of Turnitin:

Turnitin is web-based software which scans submitted works for similarity to material in public websites, academic journals, papers purchased from an essay mill, etc., and to essays and assignments concurrently or previously submitted to Turnitin, which are stored in a database. An 'originality report' is then provided to the instructor, who remains responsible for determining any breach of academic honesty.

This course uses Moodle, students can submit their assignments using the TurnItIn assignment tool. If you do not wish to use TurnItIn, you must let the Course Director know in advance (2 days before the reading response 1 is due). You will be required to submit written reports on how you completed each of your assignments (required contents below), along with detailed annotated bibliographies. Each report and bibliography must be submitted with your assignment when it is due. You will also email an electronic copy of each report and bibliography (with hyperlinked URLs in it) to the Course Director. You may be asked to take an oral examination for any or all of your written assignments directed at issues of originality.

The written report must contain the following information, as well as anything else you consider useful to the Course Director on the issue of academic integrity:

- A list of the documents and other sources you consulted to understand your topic, along with the dates you first used each of them;
- An explanation of how those documents and sources led you to the other documents and sources you used;
- An explanation of which of the sources you used had the most influence on your understanding of the topic of your assignment, and how you used them.
- ** You will be expected to attach an Assignment Attachment Form to each assignment and essay submitted (see attached form at the end of this document).

Lateness Penalty: Unless proper documentation is provided, penalty will apply for returning assignment late. 1% of penalty will apply for each day of delay, submission of work will not be allowed past one week of the deadline. If you encounter any circumstance that might delay your ability to return your work on time, please ensure to contact the course director before the deadline.

Tentative schedule of the course

- Intative 3		The course
Weeks	Sessions	Topics
1, 2 and 3		Overview of the course Topic 1: Key concepts
		 Review of course outline and course content Key concepts of the cardiovascular system and its regulation Global perspectives on cardiovascular diseases Key concepts and historical perspective
		Required reading: Wey concepts about clinical exercise physiology, discussion about Cooper and his work. Guidelines in the management of the exercising patient. Cooper KH. JAMA. 1970 Mar 9;211(10):1663-7. http://jama.jamanetwork.com/article.aspx?articleid=352592 - http://jama.jamanetwork.com/article.aspx?articleid=352592 Additional reading (optional): Review of concepts already acquired in KINE2011 and KINE3012 Articles by Kenneth Cooper: JAMA. 1968 Jan 15;203(3):201-4. A means of assessing
		maximal oxygen intake. Correlation between field and treadmill testing. Cooper KH. http://jama.jamanetwork.com.ezproxy.library.yorku.ca/article.aspx?articleid=337382

	Exercise Prescription Jogging or Sprinting. https://jamanetwork.com/journals/jama/fullarticle/345431 • Article about HIIT and CHD: Ann Phys Rehabil Med. 2017 Jan;60(1):50-57. doi: 10.1016/j.rehab.2016.04.004. Epub 2016 Jun 23. High-intensity interval training in patients with coronary heart disease: Prescription models and perspectives. Ribeiro PA et al. https://www.sciencedirect.com/science/article/pii/S18770657163 00367?via%3Dihub
3, 4 and 5	Topic 2: Threats on the cardiovascular system: 1. Atherosclerosis and promoting factors • Underlying mechanisms of atherosclerosis • Hypertension and its management: • Other risk factors and progression toward chronic cardiovascular diseases. 2. Review of material for in-class examination one Optional reading for advanced knowledge: Jacob Fog Bentzon, Fumiyuki Otsuka, Renu Virmani, Erling Falk. Acute Coronary Syndromes Compendium. Mechanisms of Plaque Formation and Rupture. Circulation Research. 2014; 114: 1852-1866. doi: 10.1161/CIRCRESAHA.114.302721 http://circres.ahajournals.org/content/114/12/1852.long

Assignment 1:

- Reading response one is due September 23rd, 2018
 - Visual summary 1 is due October 7th, 2018

Required readings for assignment 1 are available on Moodle and include:

- The forgotten face of regular physical exercise: a 'natural' anti-atherogenic activity.
 Justyna SZOSTAK and Pascal LAURANT. Clinical Science (2011) 121, 91–106 (Printed in Great Britain) doi:10.1042/CS20100520 91.
- A prospective randomized longitudinal study involving 6 months of endurance or resistance exercise. Conduit artery adaptation in humans. Angela L. Spence, Howard H. Carter, Louise H. Naylor and Daniel J. Green. J Physiol 591.5 (2013) pp 1265–1275 1265
- The effect of physical activity or exercise on key biomarkers in atherosclerosis _ A systematic review. Palmefors H, DuttaRoy S, Rundqvist B, Börjesson M. Atheroclerosis http://dx.doi.org/10.1016/j.atherosclerosis.2014.04.026
- Reversal of coronary atherosclerosis: Role of life style and medical management. ParsonsC, AgasthiP, Mookadam F, Arsanjani R. Trends in cardiovascular medicine. https://doi.org/10.1016/j.tcm.2018.05.002.
- Is regression of atherosclerosis plaque possible? Paramo JA. And Civeira F. Clin Investig Arterioscler. 2017;29(1):46---50.

6, 7 and **Topic 3: Vascular diseases and exercise** Vascular remodeling to respond to ischemia induced by thrombo-atherosclerotic processes (stenosis or thrombus) Peripheral arterial disease: Global perspective and Physiopathology O Exercise as a therapy for peripheral artery disease Pulmonary hypertension Optional readings for advance learning: Pathogenesis of the limb manifestations and exercise limitations in peripheral artery. William R Hiatt, Ehrin J Christopher J Larson, Eric P Brass. Armstrong, Circulation research. 2015; 116:1527-1539) Fakhry F et al. Endovascular Revascularization and Supervised Exercise for Peripheral Artery Disease and Intermittent Claudication: A Randomized Clinical Trial. JAMA. 2015 Nov 10;314(18):1936-44. doi: 10.1001/jama.2015.14851. Brian H. Annex Nature Reviews Cardiology 10, 387-396 (July 2013) Therapeutic angiogenesis for critical limb ischaemia. http://www.nature.com.ezproxy.library.yorku.ca/nrcardio/jou rnal/v In-class examination 1 (22% of final grade) is October 22nd, 2018 8-10 Feedback about in-class exam 1 and exam viewing Topic 4: Heart failure and exercise part 1 Diagnosis and prognosis: using exercise testing Heart failure with reduced ejection fraction Heart failure with preserved ejection Progression of heart failure: Impact of exercise training _ Part one Sympathetic nervous hyper-activity and exercise in heart failure Required readings: Ettore Crimi and colleagues. Mechanisms by which exercise training benefits patients with heart failure. http://www.nature.com.ezproxy.library.yorku.ca/nrcardio/journal/ v6/n4/full/nrcardio.2009.8.html Optional readings:. The physiopathology of heart failure with preserved ejection fraction. Barry A Borlaug. Nature reviews in Cardiology 11, 507-515 (2014).http://www.nature.com.ezproxy.library.yorku.ca/nrcardio/journal/

v11/n9/full/nrcardio.2014.83.html

Assignment 2:

- Reading response 2 is due November 4th, 2018
- Visual summary 2 is due November 18th, 2018

Required readings for assignment 2 are available on Moodle and include:

- Mechanisms of the Improvement in Peak VO2 With Exercise Training in Heart Failure With Reduced or Preserved Ejection Fraction. WJ Tucker, CC. Lijauco, CM. Hearon Jr. SS. Angadi, MD. Nelson, S Sarma, S Nanayakkara, A La Gerche, MJ. Haykowsky. Heart, Lung and Circulation (2018) 27, 9–21. http://dx.doi.org/10.1016/j.hlc.2017.07.002
- Soothing the sleeping giant: improving skeletal muscle oxygen kinetics and exercise intolerance in HFpEF. S Sarma & B D. Levine. 15 Sep 2015, https://doi.org/10.1152/japplphysiol.01127.2014
- Coronary Microvascular Rarefaction and Myocardial Fibrosis in Heart Failure With Preserved Ejection Fraction. Circulation. Mohammed SF, Hussain S, Mirzoyev SA, Edwards WD, Maleszewski JJ, Redfield MM. 2015;131:550–559. DOI: 10.1161/CIRCULATIONAHA.114.009625
- Skeletal muscle abnormalities and exercise intolerance in older patients with heart failure and preserved ejection fraction. Kitzman DW, Nicklas B, Kraus WE, Lyles MF, Eggebeen J, Morgan TM, Haykowsky M. Am J Physiol Heart Circ Physiol. 2014 May;306(9):H1364-70. doi: 10.1152/ajpheart.00004.2014. Epub 2014 Mar 21.

10-12	 Topic 4: Heart failure and exercise continues Progression of heart failure: Impact of exercise training _ Part two Hypertrophy and exercise training in heart failure Peripheral alteration and exercise training in heart failure Review before in-class two examination Feedback about in-class examination 2 and exam viewing
	In-class exam 2 is 18% of final grade November 28th, 2018

Important Dates: Fall Term Courses

Fall Classes Start: Sept. 5th, 2018

Last Date to Announce components of final grades: TBA

Fall Reading Days: Oct 6th – Oct 12th, 2018 Last date to submit Fall term work: Dec 5th, 2018

Fall Classes End: Dec 4th, 2018

Study Day*: Dec 5th, 2018

Fall Exams: Dec 6th – Dec 21nd, 2018

Last date to enroll without permission of course instructor: Sept 18th, 2018 Last date to enroll with permission of course instructor: Oct 2nd, 2018 Last date to drop courses without receiving a grade: Nov 9th, 2018 Course Withdrawal Period: Nov. 10th – Dec. 4th, 2018 (see note below)

*This study day is in compliance of the Senate Policy requiring a day off prior to the start of exams

Course Withdrawal Policy:

Students have an option to withdraw from a course past the drop deadline. During the time period after the last day to drop a course without receiving a grade for a term up until the last day of classes for the term, York University undergraduate students can still withdraw from a course. The course enrolment will remain in the University's records and on official transcripts. displayed with a "W" (Withdrawn from Course) notation. This policy gives an option to students who are struggling in a course and/or who have become overwhelmed by their circumstances: it lets students minimize the impact on their academic standing, reduce their course load and focus on successfully completing their other courses.

The course withdrawal date for the Fall term is as follows: Nov. 10th – Dec. 4th. 2018 Tο see all important dates in different terms. please visit: https://registrar.yorku.ca/enrol/dates/fw18

You can withdraw from the course using the online Registration and Enrolment Module. Select the course as you normally do to drop the course and the online tool will lead you through the withdrawal process.

The option to withdraw does not apply to:

- Graduate programs
- JD program
- Practica / internships / co-op or other experiential learning placements
- Exchange / Co-registration courses taken at another institution

For more information, please visit: http://secretariat-policies.info.yorku.ca/policies/withdrawnfrom-course-w-policy-and-guidelines/

Please note: Petitions for removal of the "W" (Withdrawn from Course) notation are not permitted.

If you have any questions, please contact the Faculty of Health, Office of Student and Academic Services at 416-736-5299.

Academic honesty

The online academic honesty tutorial and paper submission to TurnItIn is recommended for all courses with writing assignments.

• Students must review interactive on-line Tutorials on academic integrity:

- o http://health.yorku.ca/current-student-information/academic-integrity-tutorial/
- o https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/
- Complete the SPARK Quiz about academic honesty in the <u>SPARK course in Moodle</u> (https://moodle.yorku.ca/moodle/course/view.php?id=52143):
- Senate policy on Academic honesty can be found at:
 - http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policyon/

Policy on Requesting Make-Up Examinations & Late Submission of Assignments

The instructor have the right to request valid supporting documents in support of a request for make-up exams or late submission of assignments. All supporting documents are non-returnable.

Examples include:

- A. Religious Accommodation: Students who need to fulfill religious commitments must make requests well in advance of the assignment or examination deadlines as explained in the Religious Accommodation Guidelines
- B. Disability Accommodation: Students with disabilities who require an extension on assignments must receive written approval from the course director at least 3 weeks in advance of the scheduled deadline of submission. Requests are initiated by submitting to the course director a Letter of Accommodation issued by York University's Counselling & Disability Services

If you are a student with a disability who has already scheduled with the Registrar's Office to write a mid-term or final examination at the Alternate Examination Center but you end up being absent due to unforeseen circumstances, you may be allowed to request for rescheduling only once with a valid reason. Approvals are not guaranteed. Follow the procedures and request deadlines posted on the Registrar's Office website.

C. Medical Circumstances:

Attending Physician's Statement

NOTE 1: Other forms of medical notes are not accepted.

- D. Non-Medical Circumstances
 - Death of direct family members death certificates, obituary notice, notice of funeral services, etc.
 - Vehicle accidents automobile accident reports, etc.
 - Emergency travel airline tickets with boarding passes, bus/train tickets, etc. The date that travel was booked on must be clearly shown. Airline/train/bus ticket/receipts for emergency travel must indicate destination, departure, and return dates.

Submission of Official Forms and Supporting Documents

- i. Missed Test Documentation Form for any mid-term assignment or examination other than the final assignment/examination. <u>Missed Test Documentation Form</u> at <u>www.yorku.ca/health/current_students/documents/MissedTestDocumentationForm.pdf</u>
- ii. Final Exam/Deferred Standing Agreement Form for the final assignment or examination only. <u>Deferred Standing Agreement</u> at https://registrar.yorku.ca/pdf/deferred standing agreement.pdf

Submit the appropriate form (listed above) along with supporting documents in a complete package to the Kinesiology office located in Room 431, Bethune College within 7 calendar days of the missed assignment/examination. The period during which the University is officially closed for December holidays and statutory holidays is not counted in the determination of 7 calendar days. Weekends are not statutory holidays.

The program office is not open outside of regular office hours (8:30am – 4:30pm).

Incomplete or late submissions may not be accepted.

<u>Decisions on student request for make-up exam or late submission of assignment</u> Approvals for make-up mid-term or final examinations and extension of mid-term assignment deadlines are not guaranteed.

If your request for an extension of a term assignment or make-up mid-term examination is not approved, you are not allowed to petition and will receive a grade of zero for missed exam. If your request associated with the final assignment or examination is not approved, you may petition to your home faculty. Follow the instructions posted on the Registrar's Office website.

If a make-up exam request is approved, the student must be prepared to write a make-up exam at a date set by the course director or program office (this may be as early as a week following the missed exam). Although the content to be examined will be the same, the format may or may not follow that of the original exam. A conflict in another course during the time of the make-up is not an acceptable reason for missing the make-up (unless there is an examination in the other course at that time).

If an extension for a missed assignment is approved, the new deadline is firm and no further extensions will be considered.

Failure to comply with the above stated policies will result in a grade of zero being assigned to the missed examinations and the late assignments will be subject to mark deductions outlined in this course outline.

Important Course Information for Students and Instructors

The Senate Academic Standards, Curriculum and Pedagogy (ASCP) provide a Student Information Sheet that explains the followings.

- 1. Academic Honesty and Integrity _ <u>http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/</u>
- 2. Access/Disability _ http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/
- 3. Ethics Review Process _ http://research.info.yorku.ca/ore/process/
- 4. Religious Observance Accommodation _

https://registrar.yorku.ca/enrol/dates/religious-accommodation-guidelines-2018-2019

5. Student Conduct in Academic Situations

http://calendars.students.yorku.ca/2016-2017/policies-and-regulations/student-conduct/student-conduct-and-responsibilities

Additional information

A. Important University Sessional Dates

You will find classes and exams start/end dates, reading/co-curricular week, add/drop deadlines, holidays, University closings and more on the Registrar's Office website

B. Tuition Refund Table

You may be eligible for a full or partial refund depending on when you de-enroll from courses. Refer to the dates posted on the Office of Student Financial Services website.

C. Referencing Style

A referencing style approved by the course director must be used for all assignments and essays. As examples, this may include APA, AMA, MLA. York University Libraries provide <u>manuals</u>.

D. Writing and Learning Skills

You are strongly encouraged to seek assistance from the following university units.

- 1. Writing Centre
- 2. Learning Commons
- 3. Learning Skills Services

E. Undergraduate Grading Scale

Refer to the Registrar's Office website for details.

F. Grading Scheme and Feedback Policy

Refer to the **University Policy** for details.

G. 15% Grade Feedback Rule

Under normal circumstances, some graded feedback worth at least 15% of the final grade in Fall or Winter term courses or 30% of the final grade in Year term courses must be received by students in all courses prior to the final withdrawal date from a course, without receiving a grade. For exceptions to this rule, please visit: Grading Schemes and Feedback Policy

H. 20% Rule

No examinations or tests collectively worth more than 20% of the final grade in a course will be given during the final 14 calendar days of classes in a term. The exceptions to the rule are classes which regularly meet Friday evenings or on Saturday and/or Sunday

at any time, and courses offered in the compressed summer terms. (Note: Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.)

- I. Final Grade Reappraisals
 Refer to the <u>Registrar's Office website</u> for details.
- J. Pass/Fail Legislation

Refer to the **University Policy** for details.