

**MCMASTER UNIVERSITY**  
**Department of Kinesiology**

**Kinesiology 4SS3 Human Aging: Biological and Lifestyle Influences**

**Term:** Term 2

Winter 2018

**Instructor:** Dr. Janet Pritchard

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**Office Hours:** To be announced

**Lectures:** Mondays 11:30-12:20, Wednesdays 11:30-12:20 and Fridays 1:30-2:20pm in JHE 264

**DESCRIPTION**

This course will explore the biological changes that occur in various human systems during the aging process, and provide an understanding of the theories that have been proposed to account for these changes. It will also examine the extent to which lifestyle factors (e.g. sedentary living) and true biological aging account for the changes seen in various human systems. Finally, it will explore the important issues surrounding safe exercise prescription for the elderly participant, and the response of the older adult to a training stimulus.

**COURSE OBJECTIVES**

Upon completion of this course, students should be able to:

1. Explain aging demographics in our society and around the world, and explain how these demographics have changed over time.
2. Describe the physiological basis of theories of aging and explain the evidence that supports or refutes each theory.
3. Compare and contrast research methodologies used for studying the science of aging, and explain the use of biomarkers in human research studies.
4. Critique the impact of exercise and other factors (i.e., lifestyle and environmental) on aging and in animal models and humans.
5. Describe the contribution of stress and other hormones to the aging process.
6. Explain the age-related structural and functional changes that occur to the cardiorespiratory, muscular, skeletal and sensory systems, and describe the impact of exercise on these changes in older adults.
7. Differentiate between types of dementias, and explain how exercise can be used as a preventative and disease management strategy in older adults.
8. Define delirium, describe other post-operative concerns for older adults, and explain how exercise can be used as a preventative and rehabilitation tool for older adults.

9. Examine public health and healthcare strategies that aim to support healthy aging.
10. Synthesize literature on an age-related disease and compare and contrast the role of exercise in the prevention and management of the disease.

### **REQUIRED TEXT(S)/READINGS**

A comprehensive reading list is posted on Avenue. It is recommended that students print each reading at the beginning of the semester for easy access throughout the semester. Readings should be completed prior to the week that they are assigned.

### **TOPICS TO BE COVERED**

- Aging around the world
- Theories of aging
- Biomarkers of aging
- Stress, hormones and aging
- Impact of aging on the musculoskeletal system (frailty, sarcopenia, osteoporosis, osteoarthritis)
- Impact of aging on the nervous system
- Post-operative complications
- Public health approaches to promoting healthy aging

### **EVALUATION**

Midterm exam ( <b>During class on Fri Feb 9<sup>th</sup> 1:30pm-2:20pm, UH 213</b> )	25 %
Assignment 1	10 %
Assignment 2	25 %
Cumulative Final Exam- scheduled by Registrar	40 %

### **Details about Assessments:**

**1. Midterm exam-** This will occur during class time on. If you miss the midterm for legitimate reasons and receive approval from the Associate Dean's office (BSB room 129), you will have the opportunity to write an alternate midterm exam on Thursday March 29<sup>th</sup> at 8:30am in IWC 201. This will be your only opportunity to re-write the midterm exam.

**2. Assignments-** Please see detailed guidelines posted on Avenue.

**3. Final exam:** The final exam will be scheduled during the final exam period. The final exam will cover all course content, with a greater focus on content that has not yet been tested in the course. Questions may include multiple choice and short answer.

### **VARSITY ATHLETES AND STUDENT THERAPISTS**

No students are permitted to complete assessments prior to the rest of the class, and tests will not be given to coaches to administer to students when traveling.

- a) If you are a varsity athlete and you have a conflict with the course midterm, you must complete the student athlete academic conflict form and visit the Associate Dean's office to be advised on the next steps. The make-up midterm exam will occur during the alternate date indicated. Please inform your Professor immediately if you have a conflict.
- b) If you are a student therapist and you have a conflict with the course midterm, you are encouraged to find an alternate student therapist to fill your spot for the athletic event. You are not permitted to submit an MSAF for missed evaluations worth  $\geq 25\%$  of the final grade.

### **POLICY REGARDING DEFERRED TESTS AND EXAMS**

Students who miss the midterm for legitimate reasons, such as illness, may have the weight of the midterm added to their final exam. In all instances, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science (BSB room 129).

Students who miss a Registrar-scheduled final exam can apply to the Associate Dean's office for permission to write in the deferred final exam schedule. In all cases, appropriate documentation must be submitted to the Office of the Associate Dean, Faculty of Science, for consideration of deferred examination permission. Under no circumstances will the instructor re-schedule a final exam for individual students.

### **ACADEMIC INTEGRITY**

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences (e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript reading "Grade of F assigned for academic dishonesty", and/or suspension or expulsion from the university). It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at: <http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf>

The following illustrates only three forms of academic dishonesty: plagiarism (e.g. the submission of work that is not one's own or for which other credit has been obtained), improper collaboration in group work, copying or using unauthorized aids in tests and examinations.

### **TURNITIN.COM**

In this course we will be using a web-based service (Turnitin.com) to reveal plagiarism. Students will be expected to submit their work electronically to Turnitin.com and in hard copy so that it can be checked for academic dishonesty. Students who do not wish to submit their work to Turnitin.com must still submit a copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com. (e.g., on-line search, etc.). To see the Turnitin.com Policy, please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity)

### **ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES**

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone (905) 525-9140 ext. 28652 or email [sas@mcmaster.ca](mailto:sas@mcmaster.ca). For further information, consult McMaster

University's Policy of Academic Accommodation of Students with Disabilities.

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

### **ON-LINE LEARNING RESOURCES**

In this course, we will be using Avenue. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

### **USE OF COURSE MATERIAL**

Course materials provided by the instructor are for use by students registered in this class only. Under no circumstances are these materials to be shared, posted or sold to a third party without permission from the instructor. This includes, but not limited to, online posting of instructor provided lecture/lab notes, online lectures, recordings of lectures, or any lab materials on a website other than the Avenue site designed for this course.

### **MODIFICATIONS TO COURSE**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

### **McMASTER STUDENT ABSENCE FORM (MSAF)**

Given that all evaluations are worth more than 25% of the final grade, MSAFs will not be accepted for this course. For more information about the MSAF policy, please visit the following link: <https://www.science.mcmaster.ca/associatedean/current-students/procedures-forms.html>

### **FEEDBACK**

It really helps us improve our services when we hear from our students, faculty and staff about what we can do better. A feedback process brings to our attention situations in which we may not have adequately considered accessibility and allows us to better plan for accessibility in the future.