COURSE SYLLABUS

Course Code and Title: KIN 500P; Killam Connection: Healthy Aging from Cells to Societies
Class location: Henry Angus room 339
Class Meeting time(s): Tuesdays, 1 – 4pm

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Office Hours (scheduled hours, by appointment only, etc.): by appointment only

Course Description
“Killam Connection: Healthy Aging from Cells to Societies” will tackle the complexities of healthy aging across the lifespan and support the training of future scientists in developing practical skills in translating scientific knowledge to successfully engage the public. This 13-week course will include UBC, national and international speakers from across the biological, social and behavioural sciences.

Rationale
Healthspans and lifespans vary across individuals, communities, cultures and nations. Many factors underpin a healthier and longer life: our genetics, the healthy and unhealthy behaviours in which we engage, the toxins and infectious agents to which we are exposed, and the diseases we experience. But our bodies are more than just cells, toxins, behaviours, and diseases. Our early life experiences at home and in school, the opportunities afforded to us based on our social ranking, economics and ethnicities, and the communities from which we emerge shape how our cells express themselves to fight toxins and infections, what behaviours we learn, and ultimately, the quality and quantity of our lives. Importantly, social, economic and structural inequalities can create conditions of living whereby health disparities appear between those emerging from vulnerable and underserved backgrounds compared to those more privileged. The Wellness Industrial Complex might want us to believe that healthy aging is “one skin cream or injection away,” but the science says otherwise – healthy aging must be addressed at every stage of our lives and communities, from our early years to the golden ones.

In this graduate course and seminar series, healthy aging will be explored through these lenses – through an examination of the ground breaking research on cellular, social, cultural, behavioural, structural, and environmental factors that intersect to predict how long and well we live, both physically and mentally. This course also seeks to address the current public discourse on healthy aging and the myths about healthy aging that persist in the public sphere.

The following content areas will be covered in the 13 weeks of the course;
1. Omics of longevity;
2. Early life experiences and longevity;
3. Healthy and unhealthy behaviours;
4. Social trajectories, structural inequalities and health disparities;
5. Health disparities and healthy aging in Canada’s Indigenous Peoples;
6. Climate change and healthy aging; and
7. Public discourse on aging and knowledge translation.

Aims and Outcomes
Students will be provided the opportunity to develop skills integrating their knowledge from this course and scientific backgrounds for the purpose of translating the content effectively for the
public. Students will be provided training in translating the science of healthy aging using twitter, video, and engagement with members of the aging community. Students will be expected to partner with a Professor Emeritus to complete some of their work. More details will be provided in August.

The public series of lectures seeks to inform the public on the majority of the content areas under consideration in the graduate course. Invited lecturers to the public series will also lead 5 of the graduate seminar classes. Our list of final national and international scholars will be available in late August.

**Specific Learning Objectives:**

The following is the list of course sections and materials likely covered in the course.

1. Omics of longevity
   At its most basic level, healthy aging can be drilled down to the health of our cells. Aging mechanisms in our cells regulate how well and long we live and influence disease development and its progression. There are nearly 20,000 protein-encoding genes in the human genome that regulate cellular function and organ health. Since behavioural, social, and environmental factors can impact the production of these 20,000 proteins, ultimately shaping healthy aging and disease, emerging scientists from across the disciplines should understand the basic functioning of our cells, tissues and organs, and how health is not the result of just one factor, even at the cellular level. In the course section, Omics of longevity, a review of the groundbreaking field of precision health will be provided, with an examination of the genomics, epigenomics, transcriptomics, proteomics, and metabolomics of health and aging.

2. Early life experiences and longevity
   Prenatal and early life experiences can shape the expression of our genes and the trajectories of our health. Prenatal experiences, including maternal environmental, physical and psychological stressors, can alter expression of genes and production of protein postnatally. Adverse childhood experiences, on the one hand, and warmth and care, on the other, further impact cellular aging mechanisms across the lifespan, but can also create environments that shape the engagement in unhealthy or healthy behaviours. In this section of the course, an introduction to the impact of early childhood on health and aging will be provided, with a focus on how early life trauma and intergenerational trauma can impact health, and how resiliency can be borne from trauma.

3. Healthy and unhealthy behaviours
   Healthy and unhealthy behaviours come in many forms, including smoking, physical activity and diet. New information about what foods to eat or avoid in is constantly being reported, and having a basic understanding of nutritional content and requirements, and their impact on our health, is essential. Similarly, exercise comes in all shapes and forms, and it’s important for scientists to understand the role of frequency, intensity, time, and type (FIT) in determining the impact of health across the lifespan and health status. This section of the course will lead to a deeper understanding of the impact of nutrition and exercise and their roles on health.

4. Social trajectories, structural inequalities and health disparities
   The social determinants of health model highlights that our social, economic, and physical environments shape our health, equally, if not more than, our biology and behaviours. In this section of the course, work will be presented highlighting how these structural inequalities drive health disparities in vulnerable and underserved populations that ultimately determine how long and well people live.
5. Health disparities and healthy aging in Canada’s Indigenous Peoples
There are no greater health disparities in Canada than between Indigenous and non-Indigenous people in Canada. Indigenous Peoples across Canada are at greater risk for all non-communicable diseases as a result of social and economic inequalities and intergenerational traumas that have persisted for generations. Indigenous ways of knowing however provide a way of being for wellness and resilience across the lifespan in the physical, emotional, mental and spirituals realms. Students will be introduced to the health disparities that exist between Indigenous and non-Indigenous people in Canada, and Indigenous ways of knowing that bolster wellness and resilience.

6. Climate change and healthy aging
The changing environment is causing a global crisis of mass fires, floods, and droughts. The warming planet has also created an environment for the population of some parasites, like ticks, to exponentially expand, causing an increase in diseases such as Lyme. New evidence is also emerging that the melting of the icecaps is releasing long-dormant bacteria and viruses that were trapped in ice and permafrost for centuries, perhaps leading to the emergence of the reemergence of diseases that have not been experienced in centuries. This course will introduce students to how climate change is and will affect our health in the coming century.

7. Public discourse on aging and knowledge translation
The public has easy access to misrepresentations of scientific studies and, frighteningly, to growing misinformation and fake information that is purposefully created. The course seeks to support students to develop the knowledge and to practice lead to public discussions of the science of healthy aging through a series of public-facing and social media experiences.

Format and Procedures:
How is the course structured and how will classes be carried out? What behavioral expectations does the instructor have for the students in class? This is where specifications for attendance, participation, respect for others, etc. should be spelled out to act as a behavioral guide. If the course has multiple formats (like lecture & recitation, lab and discussion, group learning projects and/or presentations) these should be explained clearly

Course Requirements
TBA

Policies and Expectations
The following is a list of all policies and guidelines that should be included on the course outline. Instructors should not be limited to the three examples included below and may wish to include statements around participation, inclusivity, email and technology in the classroom, and scheduling meetings outside of class time.

Class Attendance
Regular attendance is expected of students for all lectures and seminars. Students who neglect their academic work and assignments will not receive grades for those assignments. Students who are unavoidably absent because of illness or disability should report to their instructors on return to classes.

Academic Accommodation for Students with Disabilities
The University's goal is to ensure fair and consistent treatment of all students, including students
with a disability, in accordance with their distinct needs and in a manner consistent with academic principles. Students with a disability who wish to have an academic accommodation should contact Access and Diversity without delay.

**Academic Integrity**

All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action. It is your responsibility to become familiar with the University of British Columbia’s Academic Honesty and Plagiarism Policies, as well as the Student Declaration and the consequences of violating these policies.

**Readings and Resources**

TBA.

**Evaluation**

**Evaluation procedures:**

1. **Commentary on course readings:**
   Students will be required to prepare a ¼ to ½ page commentary on the weekly reading(s) for 4 of the 12 class lectures, submitted the day prior to class. There will be a process in place to ensure that commentaries are evenly distributed across the 12 weeks of the course. Students will be expected to lead discussions on the weeks they chose to prepare commentaries.

   - 20% of final grade

2. **Public commentary on peer-reviewed manuscript:**
   Students will be required to set up a professional twitter account, if they do not already have one. Students will be expected to keep an active engagement with the public and community on campus throughout the course by engaging the course hashtag: #UBCKillamHealthyAging.

   Active engagement will be evaluated with students identifying a recent published peer-reviewed manuscript during 4 of the weeks in the course, summarizing results into a tweet, and maintaining an active conversation of the topic with the public and UBC community.

   - 20% of final grade

3. **Knowledge Translation Video:**
   Students will be asked to partner with a Professor Emeritus from UBC’s Emeritus College to develop a knowledge product. Specifically, each student will work with a retired UBC faculty member to:

   1. Identify a research question that is of interest and is meaningful to the retired adult associated with a truth or myth about healthy aging.

   2. Review the literature around this area.

   3. Develop a key message that both the student and professor emeritus think needs to be communicated to society about older adults and aging.
4. Work at UBC Studios to develop a short (maximum 3-5 minute) video that communicates the message.

- 50% of final grade (graded by course instructors (40%) and the professor emeritus (10%)).

All 25 videos will be viewed at a screening for the public at the end of the course, shared on twitter, and the course website.

4. Self-reflection activity
In addition, prior to starting their engagement with the professor emeritus, students will be asked to reflect on their approach to integrated knowledge translation. Students will be asked to reflect on principles of engagement and integrated knowledge translation that will guide their approach to working with their partner. They will be asked to review the following materials:


B. KT Encounters blog: Commitment issues
   - **Part 1**: How to get my organization to say yes to an integrated KT project (Chris McBride, executive director of Spinal Cord Injury BC)
   - **Part 2**: How to foster long-term collaborations with community organizations – a researcher’s perspective (Heather Gainforth, Assistant Professor, University of British Columbia Okanagan)


Students will be asked to *write a two-page reflection that outlines how they will approach their integrated knowledge translation partnership, by answering the following two questions:*

1. What is integrated knowledge translation and how is it different than end-of-grant knowledge translation?
2. What principles and strategies will you use to guide your partnership?

- 10% of final grade

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*The Topic or Name of Each Assignment*
Include general information about the assessments, the overall goals, and how the assessments will address specific learning objectives (more detailed information can be provided later in class or as part of an assignment handout).

*Grading*
1. Commentary on course readings: 20%
2. Public commentary on peer-reviewed manuscript: 20%
3. Knowledge Translation Video: 50%
4. Self-reflection activity: 10%

Missing an assignment completely will lead to losing the total grade for that assignment. If each assignment were graded on a total of 100, 5 points will be lost daily for late submissions. Class assignments will not be rescheduled for any reason other than a medical issue or family emergency. Written documentation must be presented in order for the test to be rescheduled. If you do not contact your instructor, you will be given a score of zero on the assessment.

Policy on Text-Matching Software (if applicable)
UBC subscribes to Turnitin, an online system that compares written material with the Web and with other material submitted to its database. Faculty, staff, and students can upload submissions and check for duplication of material in other sources and possible plagiarism.

Tentative Course Schedule
The topics and speakers for each class are listed below, although this may be subject to change. Assigned readings will be finalized in September.

The 13-week course will cover the following 13 topics, and listed speakers have agreed to participate in the course and public lecture series. Importantly, UBC faculty members come from across campus, including School of Kinesiology, School of Population and Public Health, Department of Experimental Medicine, Department of Physical Therapy, and Department of Medical Genetics and Department of Biochemistry. Bolded Topics are associated with the invited national and international speakers who will also deliver one of the 6 organized public talks.

1. Introduction to the course; Introduction to using social media for Knowledge Translation (KT)
Lecturers: Eli Puterman, presenting the course materials, timeline and evaluation procedures, and MSc student, Sarah Weller, from the Department of Physical. Ms. Weller is an expert in knowledge translation through Twitter and other social media platform. Ms. Weller organized an international Twitter conference in physical therapy that had over 500 participants actively engaged throughout the 24 hour conference.

2. Basic frameworks within knowledge translation
Lecturer: Heather Gainforth, PhD, Assistant Professor, UBC Okanagan’s School of Health and Exercise Science. Expertise: Knowledge Translation, Implementation Science.

3. Omics and precision health
Lecturer: Lloyd Minor, MD, Stanford University, Dean of School of Medicine. Expertise:Precision medicine, precision health, and omics.

4. Social epigenetics
Lecturer: Michael Kober, PhD, Professor, UBC’s Department of Medical Genetics. Canada Research Chair in Social Epigenetics. Expertise: Social epigenetics, population epigenomics, gene regulation.

5. Adverse childhood experiences and health across the lifespan
Lecturer: Eli Puterman, PhD, Assistant Professor, UBC’s School of Kinesiology, Canada Research Chair in Physical Activity and Health.
6. Adversity, trauma, resiliency and health  
Lecturer: Rachel Yehuda, PhD, Professor, Ichan School of Medicine at Mount Sinai, New York  
Expertise: Early life and intergenerational trauma, resiliency, and health

7. Social inequalities and health disparities  
Lecturer: Eva Oberle, PhD, School of Population and Public Health  
Expertise: Social determinants of health across the lifespan; childhood socioemotional health

8. Healthy aging and Indigenous ways of knowing  
Lecturer: UNKNOWN  
Expertise: Health, health disparities in Indigenous peoples

9. Physical Activity and healthy aging in older adults  
Lecturer: Catrin Tudor Locke, PhD, Associate Dean of Research and Administration, the School of Public Health and Health Sciences at the University of Massachusetts.  
Expertise: Physical activity and health across the lifespan

10. Diet, nutrition and omics in healthy and unhealthy populations  
Lecturer: Rachel Murphy, PhD, Assistant Professor, UBC’s School of Population and Public Health, Michael Smith Scholar for Health Research.  
Expertise: Nutrition and cancer, metabolomics and health

11. Climate change and health through the lens of parasites – Mary Beth Pfeiffer  
Lecturer: Mary Beth Pfeiffer, Internationally renowned Journalist, author of Lyme: The First Epidemic of Climate Change.  
Expertise: Lyme disease from the context of climate change.

12. The public discourse of health, aging and the body  
Lecturer: Laura Hurd Clarke, PhD, Professor, UBC’s School of Kinesiology  
Expertise: Adult perceptions of aging bodies, public discourse on aging

13. Countering the myths of healthy aging in the public domain – Dr. Tim Caulfield.  
Lecturer: Tim Caulfield, LLM, Faculty of Law, University of Alberta, Canada Research Chair in Health Law and Policy  
Expertise: Health policy, public discourse on health products and aging, celebrity culture