

The University of British Columbia
School of Kinesiology

Kinesiology 500T-941

Human Physiology: Fatigue, Proprioception, Respiration.

Spring – May 24-27th, 2017
Location: Forest Science Centre,
2424 Main Mall, room 1005.

Dr. J. Timothy Inglis
604-822-1626
tim.inglis@ubc.ca

Location and Time:

Graduate students taking the course for credit will be required to attend a four-day seminar workshop that will take place during the week of May 24-27, 2017, on the University of British Columbia Vancouver campus – meeting rooms and lecture locations are still to be determined. An estimation of the timetable is listed below.

Description

This 3 credit graduate course will run as a mini-workshop and will focus on the examination of the Human physiological processes under three themes; central and peripheral muscular fatigue, proprioception and hand function, and respiratory function. The course will run over four consecutive days. For each of the first three days, a keynote lecture will be given in each of the above themes, and will be accompanied by guest lectures from other researchers from within their particular research theme. Students taking the course for credit will be pre-assigned to working groups and will work in those groups during the week. Emphasis will be placed on a critical analysis of the scientific literature, on designing potential experiments within the research theme of interest to the student, as well as an oral presentation of a research project by each student and a term paper.

Course Objectives

1. To explore the physiological processes underlying a) central and peripheral muscle fatigue; b) proprioception as pertaining to hand function; c) human respiratory control.
2. To develop in a short time frame experiments and research designs that focus on the investigation of the functional roles within one of the three areas listed above.
3. To further develop the presentation skills of the student, and to advance critical thinking and evaluation of the current physiological literature.
4. To complete within two weeks of the end of the course a 12-15 page term paper, (with up to 15 references) outlining the background literature and methodology pertaining to the above presentation.

Professor Cohort:

Co-ordinator; Dr. Tim Inglis.

Co-hort; Dr. Simon Gandevia, Dr. Chris McNeil, Dr. David Collins, Dr. Romeo Chua, Dr. Mark Carpenter, Dr. Jean-Sébastien Blouin, Dr. Bill Sheel, Dr. Robert Boushel.

KIN 500T-941

Details:

There will be a keynote guest lecture each day given by visiting Professor and Scholar, Dr. Simon Gandevia. Professor Gandevia's research is in three strands: (i) Proprioception – sensory inputs, motor commands and the body representation; (ii) Motor control and fatigue – from the motor cortex to the spinal cord and then the muscles; and (iii) Respiration – sensory and motor control of human breathing muscles in health and disease. He has published more than a hundred papers in the Journal of Physiology and two Physiological Reviews, one on supraspinal muscle fatigue and the other on proprioception.

Each keynote lecture will be based on research on the theme of the day, is designed to cover and summarize any essential foundational information from within the research theme, and will be accompanied by invited presentations from other speakers. After a final question/answer session, the students will be broken into smaller groups for round table discussions on a variety of special topics yet to be determined. Prior to the course, a reading list of relevant research article(s) from each of the guest lecturer's area will be assigned. This list will by no means be the complete reading list, and the expectation is that students taking the course for credit will engage in extensive reading. Further details will be made available at the time of the course/workshop.

Course Evaluation

- A. Graduate Presentations - 40%.** Students taking the course for credit will be assigned by the course instructor into working groups to facilitate discussion (Minimum 3 students per working group or cohort). However, on the Sat. May 27th, 2017, each student will be required to make one oral presentation of between 15-20 minutes based on a proposed research project. This will be a PowerPoint presentation and the duration may be increased/decreased depending on the number of students that have to present. Presentations will be evaluated by the Professorial Cohort in attendance.
- B. Summary Paper – 50%.** Each student will be required to independently write a summary paper, focusing on the development of a research idea (including background literature, methodology, analysis). This paper will be much like a miniature research proposal. The paper will be limited to a maximum of 20 typed double-spaced pages, including references and figures. Papers will be evaluated by an appropriate subset of the Professorial Cohort. **Papers due: June 12th, 2017 by 4:00pm (emailed to tim.inglis@ubc.ca)**
- B. Participation in class - 10%.** This grade will be determined by the Co-hort panel of Professors, as well as from a peer vote (each student will anonymously score their peers).

Enrolment:

The Western Deans' Agreement was established in 1974 as an expression of co-operation and mutual support among universities offering graduate programs in western Canada. Its primary purpose is the reciprocal enrichment of graduate programs in participating universities. Under the terms of this agreement, graduate students of the member institutions may take courses at another member institution without having to pay the host university's tuition fees. Students may be required to pay student, activity, application, or other ancillary fees to the host institution, according to general policies in effect at the host institution. Wherever possible, these fees will also be waived. For more information see: <https://www.grad.ubc.ca/current-students/student-status-classification/visiting-under-western-deans-agreement>

Students interested in taking the course for credit are encouraged to contact Helen Luk via email at:

KIN 500T-941

Readings:

Journal articles: assigned by Professor Gandevia, Professor Inglis and the Guest Lecturers, and will be made available to the reading cohort of graduate students by May 12th, 2017.

MAY 24th, 2017

- 9:00 - 9:30 - Greetings, Introduction & the Course – Tim Inglis.
9:30 - 11:00 - **Keynote Lecture #1** – Dr. Simon Gandevia: Muscle Fatigue, the motor cortex and motoneurons: what have we learned?
11:00 -12:00 - Dr. Chris McNeil - Central vs Peripheral Fatigue: Neuromuscular adaptations with old age in the healthy human.
12:00 -1:30 - LUNCH
1:30 - 2:30 - Dr. Dave Collins – Reducing fatigability of electrically-evoked contractions: a convoluted journey.
3:00 - 5:00 - laboratory demonstration: Probing the Nervous system.
5:00 - - Social time (Mahoney’s Pub).

MAY 25, 2017

- 9:00 - 10:30 **Keynote Lecture #2** – Dr. Simon Gandevia: Proprioception old and new.
10:30 - 3:30 **BREAK:** UBC Kinesiology graduation/convocation.
(Graduate students prepare for Saturday presentations).
3:30 - 5:00 - Small Group meeting: Social time. (Mahoney’s Pub)

MAY 26, 2017

- 9:00 – 10:15 - Yannick Molgat-Seon – Demand vs. capacity in the human respiratory system during exercise; the influence of age and sex.
10:30 - 11:45 - Michele Schaeffer – Neurophysiology of dyspnea in health and in patients with fibrotic interstitial lung disease.
12:00 - 1:30 - LUNCH
1:30 - 3:00 **Keynote Lecture #3** – Dr. Simon Gandevia – Output of Respiratory muscles: some surprises.
3:30 - 5:00 - Small Group meeting: Social time (Mahoney’s Pub)

MAY 27, 2017

- 9:30 - 12:00 - Graduate Student Oral Presentations.
12:00 - 1:00 - Summary/acknowledgements/Closing comments. – Tim Inglis.

Course Co-ordinator:

[J. Timothy Inglis, PhD PT](#)

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School of Kinesiology,
The University of British Columbia, Vancouver
Vancouver BC, Canada.

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Lecturers:

[Simon C. Gandevia, MD PhD DSc FAA FRACP](#)

Professor, Deputy Director,
Senior Research Fellow,
Neuroscience Research Australia (NeuRa),
Randwick, Sydney, NSW, Australia

[Chris J. McNeil, PhD](#)

Assistant Professor,
School of Health and Exercise Sciences
The University of British Columbia, Okanagan
Kelowna, BC, Canada.

[David F. Collins, PhD](#)

Professor,
Faculty of Physical Education and Recreation,
University of Alberta,
Edmonton, Alberta, Canada.

[Michele Schaeffer, MSc, PhD Candidate.](#)

Centre for Heart Lung innovation, St. Paul's Hospital,
Graduate Program in Rehabilitation Sciences,
The University of British Columbia, Vancouver
Vancouver BC, Canada.

[Yannick Molgat-Seon, MSc, PhD Candidate.](#)

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The University of British Columbia, Vancouver,
Vancouver, BC, Canada.