YORK UNIVERSITY KINESIOLOGY AND HEALTH SCIENCE
AS/SC KINE 4500 3.0 Neural Control of Movement
Winter 2024: IN-PERSON DELIVERY

Course learning objectives: The purpose of this course is to provide students with an overview of the fundamental concepts and current issues in how the brain controls movement, and the effects of dysfunction and disease on this control.

Specific learning objectives:

i. *To understand the structure and function of the nervous system. Emphasis will be devoted to central and peripheral nervous systems mechanisms involved in the production and regulation of voluntary and involuntary human movement.*
ii. *To understand the behavioural, physiological and clinical tools used to study movement neuroscience.*
iii. *To understand how the dynamic interplay between the nervous system and the physical environment influences movement.*
iv. *To understand the principal components associated with the regulation of movement (e.g., visual, proprioceptive, and vestibular control).*
v. *To understand the cognitive mechanisms influencing movement.*

Prerequisites: AS/SC/KINE 3020 Skilled Performance and Motor Learning **or** permission of the course director

Course Director: Gord Binsted, gbinsted@yorku.ca, 320 Calumet College
Office hours: By appointment/Monday 1130-130
Course Website: This course is run through eClass

Lectures: Monday/Wednesday 10h00 -11h20, January 9th – April 8th, 2024
Location
Tuesday: Victor Phillip Dahdaleh Building (DB), Room 1005
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Note: If needed, delivery via Zoom, link on eClass

Course reader: Course lectures and readings are available on eClass.

Course Evaluation:

Participation (in class – research papers)	20%
Term Paper & Oral Presentation	20%
In-class quizzes on lectures (2 total, see schedule)	20%
Final Exam	40%

ACCOMODATION IF UNABLE TO BE ON CAMPUS THE DAY OF THE CLASS: *If you are unable to make* ***one*** *particular research paper discussion class, you may write a 1 page summary of the article addressing the questions discussed in class (contact me for the discussion points).* This option will be available once per term. *If you miss a quiz, that portion of your final grade will be added to the Final.*

Structure of class *(TIMES ARE APPROXIMATE, MAY VARY DEPENDING ON TOPIC):*
Lecture class (Tuesdays W24):10h00-11h20: lecture, q&a, individual meetings.
Research paper discussion class (Thursday W24): 10h00-10h15: lecture q&a, 10h15-10h45: research paper breakout groups, 10h45-11h20 research paper discussion

CLASS SCHEDULE - Winter 2024 (subject to revision)

January 9	Introduction, course overview/design
January 11/16/18.	Topic 1: Introduction to the neural control of movement
January 23/25	Topic 2: Cognitive Factors in Motor Control
January 30/1	Topic 3: Central Contributions to Motor Control
January 6/8	Topic 4: Peripheral Contributions to Control
Feb 13	Topic 5: Neuroscience Techniques
Feb 15	Quiz #1: Topics 1-5
February 17-25	**READING WEEK**
February 27/29	Topic 6: Controlling Simple Actions
March 5/7	Topic 7: Eye-hand coordination
March 12/14	Topic 8 Perception and Action
March 19/21	Topic 9: Sequential and Bimanual Movements
March 26	Topic 10: Skill acquisition
March 28	Quiz #2: Topics 6-10
April 2/4/9	In-Class Presentations and Review

1. **Quizzes are closed book and held in class, on paper**
2. **Term Paper Due Friday March 31, 5:00 pm to eClass**

INSTRUCTIONS FOR COURSE ESSAY

LIST OF POSSIBLE TOPICS FOR TERM PAPER

1. Any topic covered in the lectures
2. Any topic in the readings not covered in the lectures. For example:

- Gender differences in skilled performance and visuospatial abilities
- Effect of aging on motor performance
- Motor (procedural) memory
- Effects of stressors on performance
- Handedness
- Current research on the role of any **one** of the following brain areas on voluntary movement, and the consequences of damage to the area: motor cortex, premotor cortex, basal ganglia, cerebellum, supplementary motor area, parietal cortex
- Drugs (including alcohol, caffeine, cannabis, and nicotine) and performance
- Neural control of speech / neural basis of speech disorders

Any other topic is negotiable.

The paper should be 5-10 pages, ***excluding*** references and figures. Use 1" margins with double spacing.

- The deadline for handing in the term paper is before midnight on the due date listed on page 1. *Late reports/assignments will be penalised (**5% per day**) without documentation.*
- Papers are submitted to Turnitin through the eClass site
- The paper should comprise a general review of the area (from either a review article or a published book) and a discussion of current research on the topic, using at least two articles from **peer-reviewed journals**. At least two articles must be original research papers (i.e., not opinion or review pieces). You will be assessed on the thoroughness with which you have researched the topic, the organization of the paper, the cogency of your arguments, and your writing style.
- Follow the American Psychological Association reference system, and include an APA style abstract at the beginning of the paper.

References:

- References must be from ESTABLISHED sources such as books or **peer-reviewed** scientific journals. Uncredited internet sources are NOT acceptable (however online scientific journals are).
- Follow the guidelines established by the APA when citing internet sources, found at: http://www.apa.org/journals/webref.html

INSTRUCTIONS FOR ESSAY OUTLINE

Following submission of your term paper you will do an 3 minute oral presentation following the guidelines for the 3-minute thesis competition (https://cags.ca/3mt-2/)

1. One single static PowerPoint slide
2. No slide transitions, animations, or 'movement' of any description
3. Your slide is to be presented from the beginning of your oration
4. No additional electronic media (e.g., sound and video) are permitted

RE-EVALUATION POLICY

During the term:

Any requests for remarking of assignments or quizzes must be received by the course instructor within 7 days of the item's mark being posted, along with the "Evaluation item remark request" form, which can be found on the course website. Please note that your mark may be ***raised, lowered, or confirmed.***

Re-appraisal of a final grade:

Any requests for re-appraisal of a final mark must be received by the course instructors within 7 days of the final grade posting, along with the "Evaluation item remark request" form, which can be found on the course website. Please note that your mark may be ***raised, lowered, or confirmed.*** If the result is still unsatisfactory, requests for a reappraisal of the final grade for a completed course are the responsibility of the Undergraduate Director. You must submit in writing a formal request for a **final grade reappraisal** to the KINE undergraduate Office. The 'Reappraisal of Final Grades' form can be picked up at the KINE Undergraduate Office.
For further details: www.registrar.yorku.ca/policies/grade.htm

Drop Date: The last day to drop a Winter term course without receiving a grade is: March 16, 2024. Withdrawal Period: March 18 – April 11, 2024
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IMPORTANT GENERAL COURSE INFORMATION FOR STUDENTS

All students are expected to familiarize themselves with the following information, available on the Senate Committee on Academic Standards, Curriculum & Pedagogy webpage (Policies, procedures, and regulations) - **https://secretariat-policies.info.yorku.ca/**

- Senate Policy on Academic Honesty and the Academic Integrity Website
- Course requirement accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

In this course, we strive to maintain academic integrity to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing SPARK's Academic Integrity module at the beginning of the course. Breaches of academic integrity range from cheating (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.) to aiding and abetting (helping someone else to cheat). All breaches in this course will be reported to the appropriate university authorities, and can be punishable according to the Senate Policy on Academic Honesty.

Faculty of Health Academic Honestly resources: https://www.yorku.ca/health/academic-honesty-3/

To promote academic integrity in this course, students will be normally required to submit their written assignments to Turnitin for a review of textual similarity and the detection of possible plagiarism. In so doing, students will allow their material to be included as source documents in the Turnitin.com reference database, where they will be used only for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin service are described on the Turnitin.com website.

TECHNOLOGY REQUIREMENT FOR THIS COURSE

This course will be run through eClass and may use zoom. It is designed as an in-person class, which may have a ***synchronous*** component if required. Thus, you are expected to be present during class time, or able to be present/logged on for zoom components. A camera is not required if we are interacting remotely, you may interact during group and class discussions via the chat.

STUDENT SUPPORT RESOURCE

Calumet and Stong Colleges' Student Success Programming:
Calumet and Stong Colleges aim to support the success of Faculty of Health students through a variety of **free programs** throughout their university career:

- Orientation helps new students transition into university, discover campus resources, and establish social and academic networks.
- Peer Mentoring connects well-trained upper-year students with first year and transfer students to help them transition into university.
- Course Representative Program supports the academic success and resourcefulness of students in core program courses through in-class announcements.
- Peer-Assisted Study Sessions (PASS) involve upper-level academically successful and well-trained students who facilitate study sessions in courses that are historically challenging.
- Peer Tutoring offers one-on-one academic support by well-trained Peer Tutors.
- Please connect with your Course Director about any specific academic resources for this class.
- Calumet and Stong Colleges also support students' Health & Wellness, leadership and professional skills development, student/community engagement and wellbeing, Career Exploration, Indigenous Circle, awards and recognition, and provide opportunities to students to work or volunteer.
- For additional resources/information about Calumet and Stong Colleges' Student Success Programs, please consult our websites (Calumet College; Stong College), email scchelp@yorku.ca, and/or follow us on Instagram (Calumet College; Stong College), Facebook (Calumet College; Stong College) and LinkedIn