

University of British Columbia – School of Kinesiology

Course Code: KIN482A

Advanced Seminar in Neuromechanics

Topic: Sensori-motor control of human balance

UBC's Vancouver Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

Course Structure: Online - Zoom synchronous

Instructor: Dr. Mark G. Carpenter

Phone: 604-822-8614

Email: mark.carpenter@ubc.ca

Office: Room 213 – Osborne Centre Unit I

Lecture Location and Time:

Tuesday and Thursdays Canvas Zoom 2:00 – 3:30 pm

Office hours:

Canvas Zoom Day and Time: To Be Determined

First 40 mins will be open (drop-in) tutorial

Last 20 mins will be reserved for short individual appointments if needed (requested in advance and held in private breakout room)

Course Description

The course will examine the sensory, motor and biomechanical factors that contribute to human balance control during quiet standing and postural reactions to internal and external perturbations. Emphasis will be placed on understanding the characteristics of healthy balance control and changes associated with balance deficits due to age and disease.

Course Learning Objectives:

By the end of this course, you will be expected to:

1. understand the sensory and motor processes involved in the control of human balance
2. understand the biomechanical and physiological factors contributing to healthy static and dynamic balance control
3. understand the techniques and tools used to measure human balance
4. identify functional outcomes associated with balance disorders due to age and disease
5. identify current approaches to treating balance deficits and falls

General Outline of Lectured Topics

- Introduction to human balance
- Static balance control
- Anticipatory balance control
- Reactive balance control
- Aging effects on balance
- Cognitive and emotional influences on balance
- Balance Disorders
- Treatment & Intervention approaches for balance deficits and fall

Prerequisites: Fourth-year standing & minimum of two of the following courses: KIN 310, KIN 311, KIN 313, KIN 316, KIN 411, KIN 419.

Required Textbook: NONE

Online Classes:

All lectures will be delivered online on Zoom, made available through a link on the KIN 482B Course Canvas webpages. Online classes will be presented 'live' and synchronous with the regular scheduled lecture times, unless otherwise notified. Recordings of the 'live' online lectures will be made available after the class in an unedited format.

Course Assessments

This is an overview of the assessments for this course.

Assessment	Grading
Mid-Term 1 – Tuesday, October 10th, 2023 (tentative date only - to be confirmed) The midterm will be written in Canvas Quizzes during regular class time	25%
Mid-Term 2 – Thursday, November 9th, 2023 (tentative date only - to be confirmed) The midterm will be written in Canvas Quizzes during regular class time	25%
Final Exam – During regular exam period (between Dec 11th-22nd)	50%

All students are **required** to write **BOTH** mid-term exams and the final examination.

Note: ***Both Midterm Exams are written only during regular scheduled class-time online***. Midterm tests will not be rescheduled for any reason. Both Midterm test results will count toward your final grade. Midterm test values can only be re-weighted to the Final exam if written documentation is provided for a University-approved reason for your absence, such as a medical issue or family emergency. If you do not contact your instructor and provide written documentation for an absence from a Midterm, you will be given a score of zero on the assessment.

Online Midterm/Exam Format: "Bellringer" Type: (Timed exam, questions must be answered in sequence, one at a time, question locked after answered).

Question types: Multiple choice, fill in the blank, matching, true/false

Class notes and use of Canvas:

Class notes (skeleton version) will be made available in PPT file-format through the course website. Students are encouraged to have these notes accessible along with paper and pen for each class. Notes will be posted 18-hours prior to each class. Please keep in mind that these

notes provide a basic overview of what will be covered and do not contain important details, information related to discussions, in-class assignments, or specific examples, which will be covered in class. The instructor will not make a full set of notes available online, and will not provide them upon request. Missed class notes should be acquired from your classmates, or from recorded lectures if made available online.

Policies and Expectations:

Class Attendance

Regular online attendance is expected of students for all lectures. Students who neglect their academic work and assignments may be excluded from final examinations. 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.

Additional Materials

Online Communications

In this course, and throughout your program, you are expected to communicate in a respectful and professional manner. You may find it helpful to review [UBC's Distance Learning Communication Online: Netiquette](#)[Links to an external site.](#) web page.

Web Conferencing

Your online class will be delivered using Zoom:

Zoom

Your class will be meeting virtually using Zoom. All class sessions will be recorded and posted for you to view. Before recording you will have the option to off your video and/or mute your audio, change your name if you wish not to be in the recording. The recordings will be shared with you in this course.

Review the [Zoom Student Guide](#). If you are experiencing technical issues then contact the [UBC IT help desk for support](#).

University Policies

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available from the [UBC Senate Website](#). [Links to an external site.](#)

Online Learning for International Students

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit the [UBC Academic Calendar 2020/21](#) [Links to an external site.](#) for an articulation of the values of the University conveyed in the [Senate Statement on Academic Freedom](#) [Links to an external site.](#)). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses.

Course Policies

Please make sure you are familiar with the academic policies and procedures.

Academic Integrity

Students are expected to follow UBC policies for academic integrity and academic misconduct, which includes practices around plagiarism, referencing and citation, and copyright. For more see, UBC's [Learning Commons Academic Integrity resources](#)[Links to an external site.](#).

Accessibility

If you have any challenges accessing materials that will impact your success in this course, UBC's Centre for Accessibility can support your needs by providing appropriate accommodations to support you.

- Web: [UBC's Centre for Accessibility website](#)[Links to an external site.](#)
- Email: accessibility@ubc.ca

Learning Analytics

Some of the learning technologies used for this course collect data to support the improvement of teaching and learning. This includes the collection of data related to overall class progress to provide personalized feedback, engagement in discussion forums to support the fostering of community within the course, and how resources are being accessed to support improvements to the course design. To learn more about learning analytics at the Faculty of Education and at UBC, see the [What is Learning Analytics?](#)[Links to an external site.](#) page.