

**Kin 482A**  
**Sensori-motor control of human balance**

**Instructor:** Dr. Mark G. Carpenter  
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**Lecture Location and Time:**

Wednesdays Forest Sciences Centre (FSC) 1001 5:00 – 8:00 pm

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:**

- a) understand the sensory and motor processes involved in the control of human balance
- b) understand the biomechanical and physiological factors contributing to healthy static and dynamic balance control
- c) understand the techniques and tools used to measure human balance
- d) identify functional outcomes associated with balance disorders due to age and disease
- e) identify current approaches to treating balance deficits and falls

**Prerequisites:** Fourth-year standing

**Course Evaluation**

1. **Midterm examination - (30%)** - All students are **required** to write the mid-term exam  
**Date for Midterm – Wednesday, Feb 16<sup>th</sup>, 2020**
2. **Presentations - (20%)** – All students **are required** to prepare and deliver a powerpoint presentation (in-class) based on a balance-disorder research topic.  
**Date for Presentations – Wed April 6th, 2022** (tentative – to be confirmed)  
Presentation details (incl. whether in-person or online) to be confirmed
3. **Final Exam – (50%)** - All students are **required** to write the final exam  
**Date and time of the final exam set by registrar during final exam period**

Note: Midterm tests will not be rescheduled for any reason. Midterm test values can be re-weighted to the Final exam only 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.

**Required Textbook: NONE**

### **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 bring these notes along with paper and pen to 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 all important detail or 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.

### **Policies and Expectations:**

#### *Class Attendance*

Regular attendance is expected of students for all lectures, presentations, etc. 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 with proper documentation.

#### *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.

### **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 falls