

Human Movement Laboratory

Instructor: *Mark A. Schmuckler*
Office: *AA437*
Office Hours: *Tuesdays, 1:00 – 2:00 pm, or by appointment*
Email: marksch@utsc.utoronto.ca

Course Hours: *Monday, 7:00 – 9:00 PM*
Course Location: *SW316*

Teaching Assistant: *Michelle Mcphee*
Office: *HW302E*
Office Hours: *T. B. A.*
Email: michelle.mcphee@mail.utoronto.ca

Overview of Course

The purpose of PSYC05 is to introduce students to the basic principles underlying human movement and motor control. To accomplish this goal, we will examine a range of topics on human movement, drawn from the areas of eye-movements, balance control, and locomotion. Along with gaining conceptual movement about human movement, you will gain hands-on experience in actually collecting data regarding human movement data via a variety of simple and sophisticated behavioral data gathering systems. Finally, in this course you will become acquainted with the process of analyzing the data gathered in movement students. Because the data gathered in studies on human is complex, data analysis techniques are similarly complex, often involving the use of spatial frequency analysis, and so on.

Course Requirements

There are multiple course requirements. First, you will be asked to complete multiple assignments based on the analysis and interpretation of human movement data that you are provided with in this course. Second, you will be expected to master information involving basic aspects of motor control and human movement. This information will be presented to you via a selection of course readings, as well as through class lecture. Your knowledge of this material will be assessed through standard exam procedures. A rough outline of the lecture topics for this course, as well as the due dates and relative weighting of the assignments and the exams, is given below.

<u>Week</u>	<u>Topic / Reading</u>	<u>Assignment (value)</u>
Sep. 11	Introduction to Class	
Sep. 18	<p>Motor Control: An Overview and Psychological Foundations</p> <ul style="list-style-type: none"> • Schmidt & Lee (2011). Ch. 1, Evolution of a Field of Study. In <i>Motor control and learning, 5th edition</i>, (pp. 3-19) • McGill & Anderson (2014). Ch. 5, Motor control theories. In <i>Motor learning and control, 10th edition</i>, (pp. 85-11) 	
Sep. 25	<p>Motor Control Methodology</p> <ul style="list-style-type: none"> • Schmidt & Lee (2011). Ch. 2, Methodology for studying motor performance. In <i>Motor control and learning, 5th edition</i>, (pp. 21-55) 	
Oct. 2	<p>Time Series Analysis and Signal Processing</p> <ul style="list-style-type: none"> • Warner (1998). Ch. 1, Research questions for time-series and spectral analysis studies. In <i>Spectral analysis of time series data</i> (pp. 1-12) • Warner (1998). Ch. 2, Issues in time-series research design, data collection, and data entry: Getting started. In <i>Spectral analysis of time series data</i> (pp. 13-31). 	
Oct. 9	READING WEEK – No class	
Oct. 16	Data Analysis for Assignment 1	Assignment 1 (10%) Date/Time T. B. A.
Oct. 23	Exam 1	Exam (25%)
Oct. 30	<p>Postural Control: An Overview</p> <ul style="list-style-type: none"> • Shumway-Cook & Woollacott (2012). Ch. 7, Normal postural control. In <i>Motor control: Translating research into clinical practice, 4th edition</i>, (pp. 161-194). 	
Nov. 6	<p>Postural Control: Data collection</p> <ul style="list-style-type: none"> • Rougier (2013). The influence of having eyelids open or closed on undisturbed postural control, <i>Neuroscience Research</i>, 47, 73-83. • Jeka & Lackner (1994). Fingertip contact influences human postural control. <i>Experimental Brain Research</i>, 100, 495-502. 	
Nov. 13	<p>Postural Control: In-Class Data analysis</p> <ul style="list-style-type: none"> • Raymakers et al. (2005). The assessment of body sway and the choice of stability parameters. <i>Gait and Posture</i>, 21, 45-58. • Prieto et al. (1996). Measures of postural steadiness: Differences between healthy young and elderly adults. <i>IEEE Transactions on Biomedical Engineering</i>, 43, 956-966 	Assignment 2 (20%) Date/Time T. B. A.

Nov. 20	<p>Locomotion: An Overview</p> <ul style="list-style-type: none"> • Shumway-Cook & Woollacott (2012). Ch. 12, Control of normal mobility. In <i>Motor control: Translating research into clinical practice, 4th edition</i>, 315-347. 	
Nov. 27	<p>Locomotion: Data collection</p> <ul style="list-style-type: none"> • Thorstensson, A. (1986). How is the normal locomotor program modified to produce backwards walking? <i>Experimental Brain Research, 61</i>, 664-68. • Huang, H.-J., & Mercer, V. S. (2001). Dual-task methodology: Applications in studies of cognitive and motor performance in adults and children. <i>Pediatric Physical Therapy, 13</i>, 133-140. 	
Dec. 4	Locomotion: In-Class Data analysis	Assignment 3 (20%) Date/Time T. B. A.
T. B. A.	Exam 2	Exam (25%)

All assignments are due by at the day and time indicated. Penalty for a late assignment: 1 mark per day (i.e., 1 day late, a B becomes a B-, and so on).