

***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\*](mailto:marksch@utsc.utoronto.ca)

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

Teaching Assistants: *Carly Prusky*  
Office: *HW302E*  
Office Hours: *Wednesdays 8:30-9:30am or by appointment*  
Email: [\*carly.prusky@mail.utoronto.ca\*](mailto:carly.prusky@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 studies. Because the data gathered in studies on human movement 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 two assignments based on the collection, analysis, and interpretation of the human movement data that you collect 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.

General Topics, Readings, Course Assignments, and Due Dates

Week	Topic / Reading	Assignment (value)
Week 1	Introduction to Class	
Week 2	Motor Control: An Overview <ul style="list-style-type: none"> <li>• Schmidt &amp; Lee (2011). Ch. 1, Evolution of a Field of Study. In <i>Motor control and learning, 5<sup>th</sup> edition</i>, (pp. 3-19)</li> </ul>	
Week 3	Psychological Foundations of Motor Control <ul style="list-style-type: none"> <li>• McGill &amp; Anderson (2014). Ch. 5, Motor control theories. In <i>Motor learning and control, 10<sup>th</sup> edition</i>, (pp. 85-11)</li> <li>• McGill &amp; Anderson (2014). Ch. 12, The stages of learning In <i>Motor learning and control, 10<sup>th</sup> edition</i>, (pp. 273-298)</li> </ul>	
Week 4	Motor Control Methodology <ul style="list-style-type: none"> <li>• Schmidt &amp; Lee (2011). Ch. 2, Methodology for studying motor performance. In <i>Motor control and learning, 5<sup>th</sup> edition</i>, (pp. 21-55)</li> </ul>	
Week 5	Time Series Analysis and Signal Processing <ul style="list-style-type: none"> <li>• 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)</li> <li>• 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).</li> </ul>	
Week 6	Postural Control: An Overview <ul style="list-style-type: none"> <li>• Shumway-Cook &amp; Woollacott (2012). Ch. 7, Normal postural control. In <i>Motor control: Translating research into clinical practice, 4<sup>th</sup> edition</i>, (pp. 161-194).</li> </ul>	Assignment 1 (10%)
Week 7	<b>Exam 1</b>	Exam (25%)
Week 8	Postural Control: Data collection <ul style="list-style-type: none"> <li>• Rougier (2013). The influence of having eyelids open or closed on undisturbed postural control, <i>Neuroscience Research</i>, 47, 73-83.</li> <li>• Jeka &amp; Lackner (1994). Fingertip contact influences human postural control. <i>Experimental Brain Research</i>, 100, 495-502.</li> </ul>	
Week 9	Postural Control: Data analysis <ul style="list-style-type: none"> <li>• Raymakers et al. (2005). The assessment of body sway and the choice of stability parameters. <i>Gait and Posture</i>, 21, 45-58.</li> <li>• 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</li> </ul>	

Week 10	<p>Locomotion: An Overview</p> <ul style="list-style-type: none"> <li>• Shumway-Cook &amp; Woollacott (2012). Ch. 12, Control of normal mobility. In <i>Motor control: Translating research into clinical practice, 4<sup>th</sup> edition</i>, 315-347.</li> </ul>	Assignment 2 (20%)
Week 11	<p>Locomotion: Data collection</p> <ul style="list-style-type: none"> <li>• T.B.A.</li> </ul>	
Week 12	<p>Locomotion: Data analysis</p> <ul style="list-style-type: none"> <li>• T.B.A.</li> </ul>	Assignment 3 (20%)
T. B. A.	<b>Exam 2</b>	Exam (25%)

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