

**NEUROSCIENCE III: SENSORY AND MOTOR SYSTEMS**  
**NROC64 Lec 1 Winter 2008**  
**(Mon 3-5pm and Thur 2-3pm HW216)**

**Instructor:** Prof. Franca Placenza

**Office:** SW531

**e-mail:** fplacenza@utsc.utoronto.ca (Always include NROC64 in subject field)

**Office hours:** Wed 2-4pm

---

This is a course on the neurobiology of sensory and motor systems. It provides an introduction to the mechanisms by which the nervous system processes sensory information and controls movement. The sensory systems covered in the course include the visual, auditory and vestibular systems, the chemical sensory systems taste and smell, and the somatic sensory systems including touch and pain. For each sensory system, you will learn about their specialized sensory receptor cells, how physical stimuli are transduced by those receptor cells into neural signals, and the central nervous system pathways involved in processing that sensory information. The last few lectures of the course are dedicated to motor systems and will provide an understanding into the mechanisms by which movement is controlled by both the spinal cord and the brain.

#### **TEXTBOOK**

Bear, M.F., Connors, B.W., & Paradiso, M.A. (2007). *Neuroscience: Exploring the Brain* (3<sup>rd</sup> ed.). Baltimore, MD: Lippincott Williams & Wilkins.

#### **COURSE WEBSITE**

Course-related information including the course outline and lecture notes will be provided on **Blackboard**. Blackboard is an on-line course management system much like the UTSC intranet. In order to access course materials on Blackboard, you must have an active UTORid. For help with activating your UTORid, please visit the Scarborough campus computing help desk (B-487). Each time you want to log on to the course site on Blackboard, you simply go to the University of Toronto homepage, and click on "**log-in to the portal**". Please note that all course-related material will be posted on Blackboard and not the UTSC intranet. It is, therefore, important that you figure out how to access the course materials on Blackboard at the beginning of the term.

#### **EVALUATION**

The course material is divided roughly into three sections, with an opportunity for evaluation following each section. There will be two term tests written during lecture time (2 hours), each worth 30% of your final grade. There will also be a 3-hour final exam at the end of the term worth 40% of your final grade.

##### ***Structure of Tests and Exam***

The term tests will consist of mostly multiple-choice questions and a few short-answer questions. The final exam will similarly consist of multiple-choice and short-answer questions. The final exam will be cumulative. However, greater emphasis will be placed on material covered after the second term test. You are responsible for assigned readings and lecture material.

Test/Exam	Date	% final grade	Duration	Material covered
Term Test #1	February 11	30%	2 hours	Ch. 9, 10, 11 (up to p.376) & Jan.7 – Feb.4 lectures
Term Test #2	March 10	30%	2 hours	Ch. 8, 11 (p.376-385), 12 (up to p.408) & Feb.7 – Mar.3 lectures
Final Exam	TBA	40%	3 hours	All

### POLICY ON MISSED TESTS

If you miss either of the term tests due to illness, you will have the opportunity to write a make-up test which will be scheduled at a mutually agreeable time the following week. This consideration will ONLY be made for students who provide appropriate medical documentation **within one week** of the missed test (preferably as soon as possible, since you will have to make arrangements to write the make-up). If documentation is not provided within one week, a grade of ZERO will be given for the missed test. If you miss the final exam, you must contact the Office of the Registrar.

### SCHEDULE OF LECTURES

DATE	TOPIC	READINGS
January 7	Course Introduction Introduction to Sensory Systems	
January 10	Vision: <i>Anatomy of the eye</i>	Chapter 9
January 14	Vision: <i>Photoreceptors</i> <i>Phototransduction</i>	Chapter 9
January 17	Vision: <i>Retinal processing</i>	Chapter 9
January 21	Vision: <i>Central processing</i>	Chapter 10
January 24	Audition: <i>Anatomy of the ear</i> <i>Auditory hair cells</i>	Chapter 11 (p.344-376)
January 28	Audition: <i>Auditory transduction</i>	Chapter 11 (p.344-376)
January 31	Audition: <i>Auditory pathways</i>	Chapter 11 (p.344-376)
February 4	Audition: <i>Sound localization</i>	Chapter 11 (p.344-376)
February 7	Vestibular system	Chapter 11 (p.376-385)
February 11	<b>TERM TEST #1</b>	
February 14	Vestibular system (continued)	Chapter 11 (p.376-385)
February 18, 21	<b>READING WEEK: NO CLASS</b>	

February 25	Chemical Senses: <i>Taste</i>	Chapter 8 (p.252-263)
February 28	Chemical Senses: <i>Smell</i>	Chapter 8 (p.263-275)
March 3	Somatic Sensory System: <i>Touch</i> <i>Somatosensory cortex</i>	Chapter 12 (p.388-408)
March 6	Somatic Sensory System: <i>Pain</i>	Chapter 12 (p. 408-418)
March 10	<b>TERM TEST #2</b>	
March 13	Somatic Sensory System: <i>Pain (continued)</i> <i>Temperature</i>	Chapter 12 (p. 408-421)
March 17	Motor Control: <i>Lower motor neuron circuits</i> <i>Spinal control of movement</i>	Chapter 13
March 20	Motor Control: <i>Spinal control of movement (continued)</i>	Chapter 13
March 24	Motor Control: <i>Cortical control of movement</i>	Chapter 14 (p.452-464)
March 27	Motor Control: <i>Basal ganglia and Cerebellum</i>	Chapter 14 (p.464-478)
March 31	Motor Control: <i>Basal ganglia and Cerebellum</i> <i>(continued)</i>	Chapter 14 (p.464-478)
April 3	Wrap-up	
TBA	<b>FINAL EXAM</b>	