NEUROSCIENCE III: SENSORY AND MOTOR SYSTEMS
NROC64 Lec 1 Winter 2009
(Mon 3-5pm and Thur 2-3pm SY110)

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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* (3rd ed.). Baltimore, MD: Lippincott Williams & Wilkins.

COURSE WEBSITE

Lecture-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 computing help desk (B-487) or the library. Each time you want to log on to the course site on Blackboard, you simply go to the UTSC homepage, click on "**Portal**" at the top of the webpage, and then click on "**log-in to the portal**". You then click on the course which will be found under "**My Courses**". Please note that all lecture-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.

Note: Exact dates for the term tests cannot be given at this point, since they will be arranged by the registrar's office. I have requested the dates indicated below. Tests may be held during class time or outside of class time. Changes may be made to the schedule of lectures to accommodate tests should they be scheduled during class time. A revised schedule of lectures will be posted on the course website once the official term test dates have been provided.

Test/Exam	Date	% final grade	Duration	Material covered
Term Test #1	Week of February 9	30%	2 hours	Ch. 9, 10, 11 (up to p.376) & Jan.8 – Feb.5 lectures
Term Test #2	Week of March 9	30%	2 hours	Ch. 8, 11 (p.376-385), 12 (up to p.408) & Feb.9 – Mar.5 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 complete a make-up test which will be scheduled the following week. **The make-up test will consist of an ORAL EXAMINATION given by me.** This consideration will ONLY be made for students who provide appropriate medical documentation **within one week** of the missed test. If you have missed a test, please contact me as soon as possible, since you will have to make arrangements to do the oral examination. If documentation is not provided within one week, a grade of ZERO will be given for the missed test.

Note: **If you miss the second term test and you also previously missed the first term test and completed the oral examination for that test, the oral examination for the second term test will be cumulative.**

If you miss the final exam, you must contact the Office of the Registrar.

SCHEDULE OF LECTURES *(tentative - revised schedule to be posted)*

DATE	TOPIC	READINGS
January 5	Course Introduction Introduction to Sensory Systems	
January 8	Vision: *Anatomy of the eye*	Chapter 9
January 12	Vision: *Photoreceptors* *Phototransduction*	Chapter 9
January 15	Vision: *Retinal processing*	Chapter 9
January 19	Vision: *Central processing*	Chapter 10
January 22	Vision: *Central processing (continued)*	Chapter 10
January 26	Audition: *Anatomy of the ear and Auditory hair cells* *Auditory transduction*	Chapter 11 (p.344-376)

January 29	Audition: *Auditory transduction (continued)*	Chapter 11 (p.344-376)
February 2	Audition: *Auditory pathways* *Sound localization*	Chapter 11 (p.344-376)
February 5	Audition: *Sound localization (continued)*	Chapter 11 (p.344-376)
February 9	Vestibular system	Chapter 11 (p.376-385)
February 12	Vestibular system (continued)	Chapter 11 (p.376-385)
February 16, 19	**READING WEEK: NO CLASS**	
February 23	Chemical Senses: *Taste*	Chapter 8 (p.252-263)
February 26	Chemical Senses: *Smell*	Chapter 8 (p.263-275)
March 2	Somatic Sensory System: *Touch*	Chapter 12 (p.388-400)
March 5	Somatic Sensory System: *Somatosensory cortex*	Chapter 12 (p.401-408)
March 9	Somatic Sensory System: *Pain*	Chapter 12 (p. 408-421)
March 12	Somatic Sensory System: *Pain (continued)*	Chapter 12 (p. 408-421)
March 16	Motor Control: *Muscle Physiology*	Chapter 13
March 19	Motor Control: *Spinal control of movement*	Chapter 13
March 23	Motor Control: *Spinal control of movement (continued)* *Cortical control of movement*	Chapter 13 Chapter 14 (p.452-464)
March 26	Motor Control: *Cortical control of movement (continued)*	Chapter 14 (p.452-464)
March 30	Motor Control: *Basal ganglia and Cerebellum*	Chapter 14 (p.464-478)
April 2	Motor Control: *Basal ganglia and Cerebellum (continued)* Wrap-up	Chapter 14 (p.464-478)
TBA	**FINAL EXAM**	