

NEUROSCIENCE III: SENSORY AND MOTOR SYSTEMS
NROC64 Winter 2010

Instructor: Crystal Dykstra

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Office: PL103, room # 1

Office hours: TBA

Lectures: Monday, 3 – 5 p.m., HW216
Thursday, 2 – 3 p.m., SY110

Course Description:

This course surveys 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 chemical sensory systems taste and smell, the visual, auditory and vestibular systems, 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 neuronal signals, and the central nervous system pathways involved in processing that sensory information. The third section of this course is dedicated to motor systems, and will address 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

Course-related information, announcements and lecture notes will be provided on the UTSC intranet. Lecture notes will be posted the evening prior to the lecture date.

EVALUATION

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.

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 2nd mid-term. You are responsible for assigned readings and lecture material.

Test/Exam	Date	% of final grade	Duration	Material covered
Term Test #1	February 11	30%	2 hours	Ch. 8, 9, 10
Term Test #2	March 8	30%	2 hours	Ch. 11, 12 (up to p. 418)
Final Exam	TBA	40%	3 hours	Everything

Missed Lecture Test:

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. You must (1) notify me by email immediately and provide a brief explanation of the reason why you missed the term test, and (2) arrive to the make-up test with a medical note from a physician if you missed the term test as a result of illness. Use only the official medical note available for download at www.utsc.utoronto.ca/~registrar/. No other medical notes will be accepted. In the event that you are not able to obtain a medical note, you should contact me by email immediately for further instruction. Ultimately, it is **your responsibility** to contact me by email **within a week** after missing a term test to make arrangements; otherwise, 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 4	Course Introduction Chemical senses: Gustation	
January 7	Chemical senses: Gustation	Chapter 8 (p.252-263)
January 11	Chemical senses: Olfaction	Chapter 8 (p.263-275)
January 14	Vision: Anatomy of the eye	Chapter 9 (p.278-290)
January 18	Vision: Photoreceptors Phototransduction	Chapter 9 (p.290-298)
January 21	Vision: Retinal processing	Chapter 9 (p. 298-306)

January 25	Vision: Central processing	Chapter 10
January 28	Audition: Structure of the auditory system	Chapter 11 (p. 344-376)
February 1	Audition: Auditory transduction	Chapter 11 (p. 344-376)
February 4	Audition: Central auditory processes	Chapter 11 (p. 344-376)
February 8	TERM TEST #1	
February 11	Audition: Sound localization	Chapter 11 (p. 344-376)
February 15	READING WEEK: NO CLASS	
February 18	READING WEEK: NO CLASS	
February 22	Vestibular system	Chapter 11 (p. 376-385)
February 25	Vestibular system (continued)	Chapter 11 (p. 376-385)
March 1	Somatic Sensory System: Touch Somatosensory cortex	Chapter 12 (p. 388-408)
March 4	Somatic Sensory System: Pain	Chapter 12 (p. 408-421)
March 8	Term Test #2	
March 11	Somatic Sensory System: Pain (continued) Temperature	Chapter 12 (p. 408-421)
March 15	Motor Control: Lower motor neuron circuits Spinal control of movement	Chapter 13
March 18	Motor Control: Spinal control of movement (continued)	Chapter 13
March 22	Motor Control: Cortical control of movement	Chapter 14 (p. 452-464)
March 25	Motor Control: Basal ganglia and Cerebellum	Chapter 14 (p. 464-478)
March 29	Motor Control: Basal ganglia and Cerebellum (continued)	Chapter 14 (p. 464-478)
April 1	Wrap-up/Review	
TBA	FINAL EXAM	

