

FUNDAMENTALS OF NEUROSCIENCE II: CIRCUITS, SYSTEMS & BEHAVIOURS

PSYC 6253 3.0; BIO 5147 3.0; KAHS 6156 3.0

Term W 2008-09
Rm. 203 bsb, tuesdays 11:30-14:30
Faculty of Health, York University

Instructors

Joseph DeSouza CSE 1012a 416.736.2100 x22946 desouza@yorku.ca	Kari Hoffman CSE 0003a 416.736.2100 x22932 khoffman@yorku.ca	Lauren Sergio CSE 1012LS 416.736.2100 lsergio@yorku.ca
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Secretary: Sabrina Iantorno 282 BSB, 416.736.5115 x66268

Course Description

This course will focus on a systems approach to specialized circuits within the central nervous system that determine sensory, motor and cognitive functions. This course requires as a prerequisite PSYC 6256 3.0, BIO 5147 3.0 or KAHS 6156 3.0 [i.e. Fundamentals of Neuroscience I: structures, neurons and synapses.], or permission of the course directors.

The course will provide graduate students with an in depth analysis of the circuits within the nervous system that underlying the structure and function of the developing and mature nervous system. This is an advanced course that will focus on current research topics in selected areas of Neuroscience, which is the study of the biology of the nervous system and its relationship to behaviour and disease. The course includes two modules that cover a range of topics within systems neuroscience. It is designed to complement Fundamentals of Neuroscience I and in total will introduce students to the breadth of research within the field of neuroscience.

Readings

Eric R. Kandel, James Schwartz, and Thomas Jessell. *Principles of Neural Science* 4th Edition (Elsevier)

Selected readings from peer-reviewed journal articles will be assigned for each class. The text book and most of the articles are available from the York University library system from journals, such as *Nature*, *Science*, *Journal of Neuroscience*, *Neuron*, *Nature Neuroscience*, *Brain*, *Brain Research*, *Journal of Neurophysiology*, *Cerebral Cortex*, *Journal of Neurobiology*, *Neuron*, *Cell*, *NeuroReport*, *Proceedings of the National Academy of Science*. Articles not available in the library will be provided by the instructor.

Module 1 — Director: Dr. DeSouza

Neurotechniques (March 10th)
Visual and auditory systems (March 17th)
Other sensory systems (March 24th)
Vestibular system, eye movements & Higher cortical functions (March 31rd)
Basal Ganglia, Cerebellum [J. DeSouza] &
voluntary movement [L. Sergio] (April 7th)

[**Exam**] and Plasticity [K. Hoffman] (April 14th)

Module 2 — Director: Dr. Hoffman

Learning and Memory (April 21st)
Sleep and Spontaneous activity (April 28th)
Emotion/Motivation (May 5th)
Autonomic system/ hormones and stress (May 12th)

[**Exam** May 19th]

Proposal due May 12th week
Course Essay due June 2nd

Evaluation

Students will be evaluated based on two exams, class participations and term paper on a topic of the student's choice (to be approved by the appropriate course instructor). Term paper will relate to a specific topic covered in class.

Final mark will be based on:

Class Exam (2hr)	25%
Class Exam	20%
Paper presentations	20%
Class discussions and attendance	5%
Course essay (a review of an area covered in the course)	30%

Plagiarism & Academic Dishonesty

Please see the Department of Psychology's policy on plagiarism and academic dishonesty at <http://www.psych.yorku.ca/undergrad/honesty.html>