NROC61S COURSE SYLLABUS: SPRING 2002

NEUROBIOLOGY OF LEARNING AND MOTIVATION

Course Details

Instructor:

Professor N.W. Milgram
Room S-637
287-7402
Office hours: W 14:00-16:00
email milgram@psych.utoronto.ca

Teaching Assistants:

Joe Araujo jaraujo@idirect.com
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Lectures:

M 1300-1400 Room H215
W 1300-1400 Room H215
F 1300-1400 Room H215

Tutorials:

#1 Tuesday 1000-1100 Room S358
#2 Thursday 1000-1100 Room B526
#3 Friday 1400-1500 Room H310

Course Material:

For the lecture part of the course, the student will be responsible for:

1. Everything covered during lectures
2. Assigned readings

Lecture notes, powerpoint presentations, and old exams are also available on the web site:
http://www.utsc.utoronto.ca/~milgram/nroc61/

Tutorials

The tutorials are intended to familiarize the student with the general knowledge base of neuroscience, namely the published literature. The tutorial assignments will include:

1. Using the library (or internet) referencing services to obtain a list of current references on an assigned topic.
2. A 10 minute class presentation describing a selected original article.
3. A five page mini review of five original articles.
4. A final tutorial test on the class presentations.

Grading

The assignment of grades will be based upon the following:

1. Two midterm examinations. 35% (17.5 % each)
2. A comprehensive final examination 35%

3. Tutorial grade 25%
    a. Reference list - 2.5%
    b. Class presentation - 5%
    c. Mini review -7.5%
    d. Class participation - 25%
    e. Final tutorial exam -5.0%

Assigned Readings

Barkley, R.A. (1998). Attention-Deficit hyperactivity disorder. *Scientific American* (September) 279, 66-72.

Carter, C.S., & Getz, L.L. (1993). Monogamy and the prairie vole. *Scientific American* (June) 1993, pp 100-106.

Gibbs, W.W. (1996). Gaining on Fat. *Scientific American*, 275, 88-94.

Goldberger, A.L., Rigney, D.R., & West, B.J. (1990). Chaos and Fractals in Human Physiology. *Scientific American* (February), 262, 42-49.

Goldman-Rakic, P.S. (1992). Working memory and the mind. *Scientific American* (September), 267, 110-117.

Goldstein, I. (2000). Male sexual circuitry. *Scientific American* (August), 283, 70-75.

Kandel, E.R. (2001). The molecular biology of memory storage: a dialogue between genes and synapses. Science, 294, 1030-1038.

LeDoux, J.E. (1994) Emotion, memory and the brain. *Scientific Americain,* pp 50-57.

Mishkin and Appenzeller (1987) The anatomy of memory. *Scientific American*, (256), pp 80-89.

Siegal, J.M. (1999). Narcolepsy. Scientific American, (Jan) 2000,76-81.

Walsh, B.T. & Devlin, M.J. (1998). Eating disorders: progress and problems. *Science,* 1998, 280, 1387-1390.

Young, M.W. (2000). The tick-tock of the biological clock. *Scientific American* (March), 283, 64-71.

COURSE SCHEDULE

Date	Topic	Assigned Reading
1- Jan 7	Course Introduction: - What is motivation-	Goldberger et al.
9	No scheduled Lecture	
11	Hypothalamic Anatomy	
2- Jan 14	Thermoregulation and Respiration	Gibbs
16	Physiology of Thirst	
18	Neuriobiology of Thirst	
3- Jan 21	Nutrient Regulation	Walsh & Devlin
23	Hunger - Hormonal and Experiental Factors -	
25	Neural Mechanisms	
4- Jan 28	Biological Clocks	Young
30	Sleep - Function	
Feb-1	Sleep - Factors and Circuits	
5 - Feb 4	Sleep	Siegal
6	Sleep Circuits	
8	**First Midterm Exam**	
6 -Feb 11	Sexual Behavior: Hormonal Basis	Carter & Getz
13	Sexual Motivation: Development	
15	Sexual Motivation	
	Reading Week (Feb 18- 22)	
7- Feb 25	Neuroanatomical Systems and Sexual Behavior	Goldstein
27	Reward and Reinforcement: Basic Concepts	
Mar-1	Learning and Memory - Learning Paradigms	
8 -Mar-4	The Brain's Reward System	Kandel
Mar 6	Cellular Mechanisms of Learning and Memory: The synaptic change hypothesis	
Mar 8	Neurophysiological correlates : Long-term potentiation	
9- Mar 11	Reward and Emotion Based Learning	LeDoux
Mar 13	Addiction *(Guest Lecture – Dr. Suzanne Erb)*	
Mar 15	**Second Midterm Exam**	
10-Mar 18	Memory Systems : Declarative Memory	Mishkin & Appenzeller
Mar 20	Memory Systems:	
Mar 22	Memory Systems	
11-Mar 25	Working Memory	Goldman-Rakic
27	Cognitive Neuroscience	
29	The Brain's Cognitive Circuitry	
12 -Apr 1	Attention	Barkley
Apr 3	Arousal and alerting mechanisms	
Apr 5	Review	