

NROC61S COURSE SYLLABUS: SPRING 2004
NEUROBIOLOGY OF LEARNING AND MOTIVATION

Course Details

Instructor:

Professor N.W. Milgram
Room S-637
287-7402
Office hours: W 14:00-16:00
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Teaching Assistants:

Joan Chan joanwc.chan@utoronto.ca
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Lectures:

M 1300-1400 Room HW305
W 1300-1400 Room HW305
F 1300-1400 Room HW305

Tutorials:

#1 Tuesday 1000-1100 Room BV361
#2 Tuesday 1000-1100 Room SW358
#3 Friday 1400-1500 Room BV487
#4 Friday 1400-1500 Room BV526
#5 Tuesday 900-1000 Room SW358

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 - 40%
3. Tutorial grade - 25%
 - a. Reference list - 2.5%
 - b. Class presentation - 5%
 - c. Mini review -7.5%
 - d. Class participation -- 5.0%
 - e. Final tutorial exam -5.0%

Assigned Readings

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

Damasio, AR. (2002). Remembering when. *Scientific American* 287 (September) 66-73.

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.

Hall, S.S. (2003). The quest for a smart pill. *Scientific American* (September), 54-65.

Holloway, M. (2003). The mutable brain. *Scientific American* (September), 79-85.

Kelley, AE. & Berridge, KC (2002). The neuroscience of natural rewards: relevance to addictive drugs. *Journal of Neuroscience*, 22, 3306-3311.

LeDoux, JE. (1994). Emotion, memory and the brain. *Scientific American* (June), 2270, 50-57.

Milner, P.M. (1993). The mind and Donald O. Hebb. *Scientific American* (January), 268, 124-129.

Sapolsky, R. (2003). Taming Stress. *Scientific American* (September), 87- 95.

Uvnas_Moberg, K. (1989). The gastrointestinal tract in growth and reproduction. *Scientific American* (July) 78-83.

Walsh, BT & Devlin, MJ. (1998). Eating disorders: progress and problems. *Science*, 280,1387-1390.

Wright, K, (2002) Times of Our Lives. *Scientific American (September)* 287, 58-65.

Wurtman, RJ and Wurtman, JJ. (1989). Carbohydrates and depression. *Scientific American (January)* 68-75.

COURSE SCHEDULE

Date	Topic	Assigned Reading
1- Jan 5	Course Introduction	Goldberger et al.
7	What is motivation	
9	Hypothalamic Anatomy	
2- Jan 12	Thermoregulation and Respiration	Uvnas-Moberg
14	Physiology of Thirst	
16	Neurobiology of Thirst	
3- Jan 19	Nutrient Regulation	Wurtman & Wurtman
21	Hunger - Hormonal and Experiential Factors -	
23	Neural Mechanisms	Walsh & Devlin
4- Jan 26	Biological Clocks	Wright
28	Sleep - Function	
30	Sleep - Factors and Circuits	
5 - Feb 2	First Midterm Exam	
4	Sleep	Siegel
6	Sleep Circuits	
6 -Feb 9	Sexual Behavior: Hormonal Basis	Carter & Getz
11	Sexual Motivation: Development	
13	Sexual Motivation	
	Reading Week (Feb 16- 20)	
7- Feb 23	Neuroanatomical Systems and Sexual Behavior	Goldstein
25	Neuroanatomical Systems and Sexual Behavior	
27	Reward and Reinforcement: Basic Concepts	
8 - Mar 1	Learning and Memory - Learning Paradigms	Sapolsky
3	The Brain's Reward System	
5	Addiction	
9- Mar 8	Learning and Memory- An Introduction	Damasio
10	Declarative Memory	
12	Declarative Memory - Structure	
10- Mar 15	Second Midterm Exam	
17	Reward and Emotion Based Learning – Motor Learning	Le Doux
19	Memory Systems: Working Memory	Goldman-Rakic
11- Mar 22	Memory Systems: Consolidation	Milner
24	Learning and Memory: Neurophysiological Correlates	
26	Learning and Memory: Correlates	
12- Mar 29	Learning and Memory: Induction Mechanisms	Hall
31	Learning and Memory: Maintenance and Storage	Holloway
April 2	Wrap Up	