NROC61S COURSE SYLLABUS: SPRING 2005

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:

Christina de Rivera christina.derivera@utoronto.ca
Pria Nippak Pria.nippak@utorointo.ca
Michelle Ryan michelle.ryan@rogers.com
Christa Studzinski c.studzinski@utoronto.ca

Lectures:

Wed 1:00 – 2:00 SW309
Friday 10:00-12:00 SW309

Tutorials:

TUT0001	Tue	10:00	11:00	AC 332	Christa
TUT0002	Tue	10:00	11:00	BV 361	Christina
TUT0003	Fri	14:00	15:00	AC 334	Michelle
TUT0004	Fri	14:00	15:00	BV 526	Pria
TUT0005	Tue	9:00	10:00	AC 334	Christa
TUT0006	Wed	14:00	15:00	BV 359	Michelle

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) pp 66-73.

Fields, R.D. (2004). The other half of the brain. . *Scientific American* 290 (April) 54-61.

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.

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

Nestler, E.J., & Malenka, R.C. (2004). The addicted brain. (March) 290 78-85.

McKinley, MJ., et. al. (2004). Physiological and pathophysiological influences on thirst. Physiology and Behavior, 81, 795-803.

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

Siegel, J.M. (2003). Why we sleep. Scientific American, (Nov) 289, 92-97.

Tsien, J.Z. (2000). Building a brainier mouse. (April) Scientific American, 283, 62-68.

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

Wright, K. *Scientific American* , (2002) Times of Our Lives. (Sept) 287, pp58-65.

COURSE SCHEDULE

Date	Topic	Assigned Reading
1- Jan 5	Course Introduction	Goldberger et al.
7	What is motivation - Hypothalamic Anatomy	
2- Jan 12	Thermoregulation and Respiration	McKinley et al.
14	Physiology and Neurobiology of Thirst	
3- Jan 19	Nutrient Regulation Hormonal and Experiental Factors	Walsh & Devlin
21	Neural Mechanisms	
4- Jan 26	Biological Clocks	Wright
28	Sleep Function	
5 - Feb 2	**First Midterm Exam**	Siegal
4	Sleep Circuits	
6 -Feb 9	Sexual Behavior: Hormonal Basis	Carter & Getz
11	Sexual Development and Motivation	
	Reading Week (Feb 14- 21)	
7- Feb 21	Neuroanatomical Systems and Sexual Behavior	Goldstein
23	Reward and Reinforcement: Basic Concepts	
8 – Feb 28	Learning and Memory - Learning Paradigms and The Brain's Reward System	Nestler and Malenka
Mar 2	Addiction	
9- Mar 7	Learning and Memory- An Introduction; Declarative Memory	Damasio
9	Declarative Memory - Structure	LeDoux
10- Mar16	Reward and Emotion Based Learning – Motor Learning; Working Memory	Goldman-Rakic
18	**Second Midterm Exam**	
11- Mar 23	Memory Systems: Consolidation, Neurophysiological Correlates	Milner
25	Learning and Memory: Neurophysiological Correlates	Fields
12 - Apr 1	Learning and Memory: Induction Mechanisms	Tsien
3	Learning and Memory: Maintenance and Storage	