NROC61S COURSE SYLLABUS: SPRING 2000

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:

Alan Chan
Pria Nippak
Christina Siwak

Lectures:

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

Tutorials:

#1	Tuesday 1000-1100	Room H4208
#2	Thursday 1000-1100	Room R5503
#3	Friday 1400-1500	Room R4208

Course Material

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

1. Everything covered during lectures
2. Assigned readings

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. You will also give 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 - 5%
    e. Final tutorial exam - 5%

Assigned Readings

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

Crews, D. (1994). Animal Sexuality. *Scientific American* (January), 270, 108-115.

Gibbs, W.W. (1996). *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.

Kandel, E.R., & Hawkins, R.D. (1992). The biological basis of learning and individuality. *Scientific American* (September), 267, 78-87.

Lenhoff, H.M., Wang, P.P., Greenberg, F., & Bellugi, U. (1997). Williams syndrome and the brain. Scientific American (December), 227, 68-73.

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

Spanagel, R., & Weiss, F. (1999). The dopamine hypothesis of reward: past and current status. Trends in Neurosciences, 22, 521-527.

Wurtman, R.J., & Wurtman, J.J. (1989). Carbohydrates and Depression. *Scientific American* (January), 260, 68-75.

COURSE SCHEDULE

Date	Topic	Assigned Reading
1- Jan 3	Course Introduction: - What is motivation	
5	Thermoregulation	
7	Physiology of Thirst	Goldberger et al.
2- Jan 10	Physiology of Thirst	
12	Physiological Regulation of Fluid Balance	
14	Hunger	
3- Jan 17	Hunger - Peripheral Mechanisms	Gibbs
19	Hunger - Hormonal and Experiental Factors	
21	Hunger - Neural Mechanisms	
4- Jan 24	Biological Rhythms	Wurtman & Wurtman
26	Sleep – Features	
28	Sleep - Function	
5- Jan 31	Sleep - Factors and Circuits	Siegal
Feb 2	**First Midterm Exam**	
Feb 4	Sexual Motivation: Neuroendocrine system	Crews
6 - Feb 7	Sexual Motivation: Prenatal experience	
9	Sexual Motivation	Carter & Getz
11	Neuroanatomical Systems and Sexual Behavior	
	Reading Week (Feb 16- 21)	
7- Feb 21	Reward and Reinforcement: Basic Concepts	Spanagel & Weiss
23	Brain Stimulation Reward –Brain Reward Systems	
25	Addiction	
8- Feb 28	Learning and Memory - Learning Paradigms	Fuster
Mar 1	Memory Systems – Declarative Memory	
Mar 3	Memory Systems – Declarative Memory	
9- Mar 6	Memory Systems – Emotion and Reward Based Learning and Motor Learning	Goldman-Rakic
Mar 8	Working Memory	
Mar 10	Consolidation	
10-Mar 13	Memory Mechanisms - Historical Background of Synaptic Change Hypothesis	Kandel & Hawkins
Mar 15	Neurophysiologcal Models of Plasticity -	
Mar 17	Cellular Mechanisms	
11-Mar20	**Second Midterm Exam**	
22	Cognitive Neuroscience - Thought	Lenhoff et al.
24	Thought	
12-Mar 27	Language	Damasio and Damasio
Mar 29	Language	
Mar 31	Review	