



## TENTATIVE COURSE SYLLABUS

NROC61 Summer 2009

### NEUROSCIENCE II: LEARNING AND MOTIVATION

**Instructor:**

Dr J. C. LeBoutillier

Room S-557

416-287-7430

Office hours: Thurs 2-4

Email: [nroc61@utsc.utoronto.ca](mailto:nroc61@utsc.utoronto.ca)

**NOTE:** This is the only email account that will be monitored for this course.

**Teaching Assistants:**

Crystal Dykstra      [crystal.dykstra@gmail.com](mailto:crystal.dykstra@gmail.com)

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**Lectures:**

On-line

Lectures should be accessed through the link on the intranet page for our course. All lectures announcements will be posted to this page.

**Tutorials:**

TUT60001	Thurs	12:00	13:00	BV 516
TUT60002	Thurs	18:00	19:00	MW 170
TUT60003	Thurs	18:00	19:00	BV 516

**Course Description:**

This course introduces the students to learning and motivation from a physiological and behavioral perspective. Topics covered under the category of motivation include: physiological basis of eating, drinking and sexual behavior, sleep, and the neural correlates of reward. Topics covered under learning include: learning categories, memory systems and the cell and molecular basis of learning and memory.

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services Office as soon as possible. Tina Doyle, the UTSC AccessAbility Manager 416-287-7560 is available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know about your needs, the quicker we can assist you in achieving your learning goals in this course.

### **Course Material:**

Students will be responsible for:

1. All material covered during lectures
2. Assigned text chapters and primary readings
3. Tutorial assignments

### **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 oral presentation describing an assigned reading followed by 3-5 minutes of class discussion.
3. A mini-research proposal.

Details on each of these assignments are posted as part of the tutorial syllabus on the course Intranet.

### **Grading**

The assignment of grades will be based upon the following:

1. One midterm examination - 25%. This test will include MCQs and written components such as definitions and long answers.
2. A final examination - 35%. The format of the final will be similar to the midterm. You will be responsible for all lecture material covered during the course, but only the assigned readings and text chapters not covered on Test 1.
3. Tutorial grade 40%
  - a. Abstract list – 10%
  - b. Oral presentation – 5%
  - c. Research proposal -15%
  - d. Class participation – 10%

### **Missed Tests and Presentations**

**Makeup exams will not be scheduled in this course.** If you miss the midterm test you will be permitted to write a final cumulative exam on all course content valued at 60% of your final grade provided you meet the following criteria.

1. Notify me by email ASAP following the missed test.
2. Deliver a medical note from a physician to me within 2 weeks of the test. Please use only the official medical note available for download at [www.utoronto.ca/~registrar/](http://www.utoronto.ca/~registrar/). No other notes will be accepted. If these criteria are not met a grade of zero will be assigned.

A grade of zero will be given if you do not give your presentation on the assigned date. Missed presentations will only be rescheduled provided an official medical note downloaded from the UTSC website indicated above is delivered to your TA ASAP. You should be prepared to give your presentation at any tutorial following the missed date. Your TA will try to give you advance notice but this may not be possible. In the event that time does not permit us to reschedule your presentation during the term, you may be required to give your presentation during the reading week before the final exams. Failure to give your presentation on the assigned date will result in a grade of zero.

### **Late Assignments**

Late abstract lists and research proposals will be accepted with a penalty of 10% per day. All assignments are due at the start of your tutorial.

### **Texts**

- Bear, Connors & Paradiso, **Neuroscience: Exploring the Brain** 3<sup>rd</sup> edition. Note, this is the same text used in the past for this course, NROC64 and NROB60.

### **Assigned Readings**

You will be required to read the following articles. Copies of these articles are available in the library and most can be downloaded in an Adobe Acrobat (pdf) format.

Adamantidis, A., & de Lecea, L. (2008). Physiological arousal: a role for hypothalamic systems. *Cellular and Molecular Life Sciences*, 65, 1475-1488.

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

Gura, T. (2003). Obesity drug pipeline not so fat. *Science*, 299, 849-852.

Kinsley, C.H & Lambert, K.G. (2006). The maternal brain. *Scientific American* (January), 72-79.

LeDoux, J.E. (2003). The emotional brain, fear and the amygdala. *Cellular and Molecular Neurobiology*, 23, 727-738.

Lynch, G. (2002). Memory enhancement: the search for mechanism-based drugs. *Nature Neuroscience*, 5, 1035-1038.

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

Medina, J.H., Bekinschtein, P., Cammarota, M., & Izquierdo, I. (2008). Do memories consolidate to persist or do they persist to consolidate?. *Behavioural Brain Research*, 192, 61-69.

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

Siegel, J.M. (2001). The REM Sleep-Memory Consolidation Hypothesis. *Science*, 294, 1058-1063

Tsigos, C, & Chrousos, G.P. (2002). Hypothalamic-pituitary-adrenal axis, neuroendocrine factors and stress. *Journal of Psychosomatic Research*, 53, 865-871.

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

### COURSE SCHEDULE

Week	Date	Topic	Assigned Lecture Readings	Assigned Primary Reading
1	May 7	Course Introduction Regulation of Internal Body States	Chapter 15 (Hypothalamus)	
2	May 14	Introduction to the LSS Physiology and Neurobiology of Thirst	Chapter 16	Wright
3	May 21	Physiology and Neurobiology of Eating Critical Reading Session I	Chapter 16	McKinley et al. Gura
4	May 28	Biological Clocks: Sleep and Wakefulness	Chapter 19	Siegel
5	June 4	Sex, Sexuality and the Brain	Chapter 17	Kinsley & Lambert Goldstein
6	June 11	Learning and Memory: Biological Perspectives	Chapter 24	Medina et al.
7	June 18	Mid-term requested		Lynch
8	June 25	Learning and Memory: Continued	Chapter 24	
	July 2	Reading Week		
9	July 9	Learning and Memory: Neural Mechanisms	Chapter 25	Adamantidis & de Lecea
10	July 16	Neural Correlates of Reward	Chapter 15	Nestler & Malenka
11	July 23	Physiology of Emotions	Chapter 18	LeDoux
12	July 30	Stress Final Exam Review		Tsigos & Chrousos

Content listed for Weeks 1 to 5 inclusive and highlighted in yellow will be tested on the midterm.

Content listed for Weeks 6 to 12 AND all lecture content (Week 1-12) will be on the final exam.