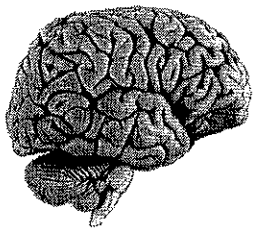

# NROC61 COURSE SYLLABUS: FALL 2005

## NEUROSCIENCE II: LEARNING AND MOTIVATION


**Instructor:**
Dr J. C. LeBoutillier
Room S-557
287-7430
Office hours: Mon 15:00 – 16:30
Or by appointment

Email: leboutillier@utsc.utoronto.ca

**Teaching Assistants:**

Christina de Rivera: christina.derivera@utoronto.ca
Pria Nippak: pria.nippak@utoronto.ca
Taryn Grieder: taryn_grieder@hotmail.com


**Lectures:**
Tues 17:00 – 20:00 MW170

**Tutorials:**

| | | | | | |
|---|---|---|---|---|---|
| TUT3001 | Tues | 16:00 | 17:00 | AC 332 | Pria |
| TUT3002 | Tues | 16:00 | 17:00 | HW 408 | Christina |
| TUT3003 | Tues | 16:00 | 17:00 | BV 359 | Taryn |

**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 now about your needs, the quicker we can assist you in achieving your learning goals in this course.

**Course Material:**

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

1. All material covered during lectures
2. Assigned text chapters and primary 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. A 10 minute class presentation describing an empirical article followed with 3-5 minutes for class discussion.
3. A mini-review of 5 empirical articles.

Details on each of these assignments are posted in the tutorial section of the course Intranet

**Grading**

The assignment of grades will be based upon the following:

1. Two midterm examinations - 30% (15 % each test). Tests will include MC and written components such as FIB, short answers.
2. A comprehensive final examination - 40%. Same format as the midterms.
3. Tutorial grade 30%
    a. Abstract list - 2.5%
    b. Class presentation – 5 %
    c. Mini review -15%
    d. Class participation – 7.5%

**Missed Tests and Late Assignments**

Makeup exams will only be considered with a note from a physician, otherwise a "0" will be recorded for that exam. Please use only the medical note available for download at www.utsc.utoronto.ca/~registrar/. Late abstracts lists and papers will not be accepted.

**Texts**

We will be using 3 chapters from the Purves text you used last year in NROB60. In addition, chapters from 2 additional texts will be used as indicated in the course schedule which follows. Copies of all texts are available on short-term loan. Text information will be discussed further at the first class.

Purves et al., **Neuroscience** 3rd edition

Rosenzweig et al., **Biological Psychology : An Introduction to Behavioral and Cognitive Neuroscience** 4th edition
Carlson, **Physiology of Behavior** 8th edition

***Assigned Readings***

You will also be required to read the following articles. Copies of these articles are available in the library and several can be downloaded from our library.

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.

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

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. *Scientific American (March)* 290 78-85.

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

Sapolsky, R. (2003). Taming stress. *Scientific American*, (Sept) 87-95

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

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

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

## COURSE SCHEDULE

| Week | Date | Topic | Assigned Lecture Readings | Assigned Primary Reading |
|---|---|---|---|---|
| 1 | Sept 13 | Course Introduction<br>Regulation of Internal Body States | | |
| 2 | Sept 20 | Physiology and Neurobiology of Thirst | Rosenzweig Chap 13 | McKinley al. |
| 3 | Sept 27 | Physiology and Neurobiology of Eating | Rosenzweig Chap 13 | Walsh & Devlin |
| 4 | Oct 4 | Biological Clocks<br>Sleep and wakefulness | Purves Chap 27 | Wright Siegal |
| 5 | Oct 11 | **First Midterm Exam Requested for this week TBA by the Registrar** | | |
| 6 | Oct 18 | Sex, Sexuality and the Brain | Purves Chap 29 | Goldstein |
| 7 | Oct 25 | Learning and Memory: Biological Perspectives | Rosenzweig Chap 17 | Damasio |
| 8 | Nov 1 | Learning and Memory: Neural Mechanisms | Rosenzweig Chap 18 | Hall Fields |
| 9 | Nov 8 | Neural Correlates of Reward | Carlson Chap18 | Nestler an Malenka |
| 10 | Nov 15 | **Second Midterm Test Requested for this week TBA by the Registrar** | | |
| 11 | Nov 22 | Physiology of Emotions | Purves Chap28 | LeDoux |
| 12 | Nov 29 | Schizophrenia and Mental Disorders | TBA | Sapolsky |

There will be no classes or tutorials on Nov 15.