

**DRUGS AND THE BRAIN**  
**PSYC62 Lec 1 Winter 2008**  
**(Fri 10-12 SW319)**

**Instructor:** Prof. Franca Placenza

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**Office hours:** Fri 12-2pm

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Psychopharmacology is the study of the effects of drugs on behaviour, cognition, and emotion. This course provides an introduction to the basic principles of psychopharmacology and focuses specifically on the psychopharmacology of drugs of abuse. Various topics relevant to the study of psychopharmacology will be covered including neurochemistry, pharmacokinetics, neurobiological mechanisms of drug action (specifically for the major classes of drugs of abuse), and the neurobiology of tolerance and dependence. This course will also examine some of the theories and ideas that have played an important role in shaping the field of drug addiction research over the past several decades. In addition, some advanced topics in the field of addiction research will be discussed including neural plasticity associated with repeated drug exposure and factors which increase vulnerability to drug addiction.

**TEXTBOOK / READINGS**

- 1) Grilly, D.M. (2006). *Drugs and Human Behavior* (5<sup>th</sup> ed.). Boston, MA: Allyn & Bacon.
- 2) You will also read various journal articles on some of the major theoretical contributions made to the field of drug addiction research, as well as articles on some advanced topics in the field. All of the assigned readings are posted on the course website.

**COURSE WEBSITE**

Course-related information including the course outline, lecture notes, and assigned readings will be provided on **Blackboard**. Blackboard is an on-line course management system much like the UTSC intranet. In order to access course materials on Blackboard, you must have an active UTORid. For help with activating your UTORid, please visit the Scarborough campus computing help desk (B-487). Each time you want to log on to the course site on Blackboard, you simply go to the University of Toronto homepage, and click on "**log-in to the portal**". Please note that all course-related material will be posted on Blackboard and not the UTSC intranet. It is, therefore, important that you figure out how to access the course materials on Blackboard at the beginning of the term.

**EVALUATION**

	<b>Date</b>	<b>% final grade</b>
Midterm	February 29	40%
Written Assignment	March 28	20%
Final Exam	TBA	40%

### **Midterm and Final Exam**

The midterm will consist of mostly multiple-choice questions and a few short-answer questions. The final exam will consist of a mix of multiple-choice, short-answer, and a few long-answer questions. The final exam will be cumulative. However, greater emphasis will be placed on material covered after the midterm. You are responsible for both assigned readings (text and articles) and lecture material.

### **Written Assignment**

This assignment will provide you with the opportunity to further explore the field of drug addiction research through independent literature review and writing on a topic on the neurobiology of addiction. The paper should be approximately 5-6 pages long (double-spaced, type-written) and is worth 20% of your final grade. Details on the assignment will be provided in a separate handout.

### **POLICY ON MISSED EXAMS AND LATE ASSIGNMENTS**

If you miss the midterm due to illness, you will have the opportunity to write a make-up test which will be scheduled during my office hours the following week. This consideration will **ONLY** be made for students who provide appropriate medical documentation **within one week** of the missed test (preferably as soon as possible, since you will have to make arrangements to write the make-up). If documentation is not provided within one week, a grade of ZERO will be given for the missed test. If you miss the final exam, you must contact the Office of the Registrar.

Late assignments will incur a deduction of **5% per day**, including weekends. Assignments are considered late if they are received after 5pm on the due date. Late assignments will be accepted up until one week past the due date, after which they will no longer be accepted.

### **SCHEDULE OF LECTURES**

<b>DATE</b>	<b>TOPIC</b>	<b>READINGS</b>
January 11	Introduction Principles of Pharmacology	Chapter 2
January 18	Pharmacokinetics Neuronal Conduction and Transmission	Chapter 3, 4
January 25	Neurotransmitter Systems	Chapter 5
February 1	Neurobiology of Brain Reward Systems Tolerance and Dependence	Chapter 6
February 8	Psychopharmacology: Stimulants and Opiates	Chapter 9, 10
February 15	Psychopharmacology: Alcohol Psychotomimetics/Psychedelics/Hallucinogens	Chapter 8 (p. 142-168) Chapter 11

February 22	<del>READING WEEK (NO CLASS)</del>	
February 29	<b>MIDTERM</b>	
March 7	Theories of Drug Addiction: <i>A focus on conditioning</i>	Siegel, 1999 Stewart et al., 1984
March 14	Theories of Drug Addiction: <i>A focus on drug-induced neuroadaptations</i>	Robinson & Berridge, 2001 Koob et al., 2004
March 21	<del>UNIVERSITY CLOSED (NO CLASS)</del>	
March 28	Advanced Topics in Drug Addiction Research: <i>Drug-Induced Plasticity</i> <i>Vulnerability to Drug Addiction</i>	Liu et al., 2005 Robinson & Kolb, 1997 Piazza & Le Moal, 1998
April 4	Wrap-up	

### ASSIGNED READINGS

Koob, G.F., Ahmed, S.H., Boutrel, B., Chen, S.A., Kenny, P.J., Markou, A., O'Dell, L.E., Parsons, L.H., & Sanna, P.P. (2004). Neurobiological mechanisms in the transition from drug use to drug dependence. Neuroscience and Biobehavioral Reviews, 27(8), 739-749.

Liu, Q.S., Pu, L., & Poo, M.M. (2005). Repeated cocaine exposure in vivo facilitates LTP induction in midbrain dopamine neurons. Nature, 437(7061), 1027-1031.

Piazza, P.V., & Le Moal, M. (1998). The role of stress in drug self-administration. Trends in Pharmacological Sciences, 19(2), 67-74.

Robinson, T.E., & Berridge, K.C. (2001). Incentive-sensitization and addiction. Addiction, 96(1) 103-114.

Robinson, T.E., & Kolb, B. (1997). Persistent structural modifications in nucleus accumbens and prefrontal cortex neurons produced by previous experience with amphetamine. Journal of Neuroscience, 17(21), 8491-8497.

Siegel, S. (1999). Drug anticipation and drug addiction. The 1998 H. David Archibald Lecture. Addiction, 94(8), 1113-1124.

Stewart, J., de Wit, H., & Eikelboom, R. (1984). Role of unconditioned and conditioned drug effects in the self-administration of opiates and stimulants. Psychological Review, 91, 251-268.