DRUGS AND THE BRAIN
PSYC62
(Fri, 10 am-12 pm; Rm. SW-319)

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Course description

Psychopharmacology is the study of the effects of drugs on behaviour, cognition, and emotion. There are many different classes of drugs that act within the central nervous system to alter behaviour, cognition and emotion. Some have been designed for the treatment of mental disorders such as schizophrenia and depression. Other drugs are known primarily for their social or recreational abuse potential. This course will provide an introduction to basic principles of psychopharmacology with a specific focus on drugs of abuse.

A range of topics pertinent to the study of psychopharmacology will be covered, including behavioural pharmacology and pharmacokinetics, neurobiological mechanisms of drug action, tolerance and dependence, and classification of psychotropic drugs. In addition, several of the major classes of drugs of abuse will be studied and recent research on the behavioural and neurobiological effects of these drugs will be examined.

Textbook

David M. Grilly (2002) *Drugs and Human Behavior, Fifth Edition.* Boston, MA: Allyn & Bacon. (You may use the 4th edition)

Evaluation

Evaluation will be based on a midterm exam (40% of final grade), a final exam (40% of final grade), and a written assignment (20%). The mid-term exam will be written in class and consist of approximately 75 multiple choice questions. The mid-term exam will be based on lecture material, textbook material that corresponds to topics covered in lecture, and assigned readings. The final exam will be cumulative and multiple choice in format. Information on the written assignment is provided in a separate handout.

Assigned readings (see Schedule of Lectures)

Articles are posted on the intranet in pdf format.

Ahmed, S., & Koob, G. (1998). Transition from moderate to excessive drug intake: change in hedonic set point. Science, 282, 298-300.

Deroche-Gamonet V, Belin D, Piazza PV. (2004) Evidence for addiction-like behavior in the rat. Science, 305:1014-7

De Vries, T.J., Shaham, Y., Homberg, J.R., Crombag, H., Schuurman, K., Dieben, J., Vanderschuren, L.J., Schoffelmeer, A.N. (2001) A cannabinoid mechanism in relapse to cocaine seeking. Nature Medicine, 7, 1099-1100.

De Vries TJ, Homberg JR, Binnekade R, Raaso H, Schoffelmeer AN. (2003) Cannabinoid modulation of the reinforcing and motivational properties of heroin and heroin-associated cues in rats. Psychopharmacology, 168, 164-169.

Siegel, S. (1976). Morphine analgesic tolerance: Its situation specificity supports a Pavlovian conditioning model. Science, 193, 323-325.

Siegel, S., Hinson, R. E., Krank, M. D., & McCully, J. (1982). Heroin "overdose" death: Contribution of drug-associated environmental cues. Science, 216, 436-437.

SCHEDULE OF LECTURES

DATE	TOPICS	READINGS
Jan 12	• Introduction to course • Principles of Pharmacology I: Defining drugs; drug-receptor interactions	• Ch 2
Jan 19	• Principles of Pharmacology II: Dose-response functions; drug-drug interactions • Pharmacokinetics I: Absorption; Routes of administration; Distribution; Metabolism	• Ch 2 • Ch3
Jan 26	• Neuronal transmission and conduction • Neuroactive ligands	• Ch 4 • Ch 5
Feb 2	• RESEARCH TUTORIAL	
Feb 9	• Tolerance and dependence … and sensitization	• Ch 6
Feb16	• Drug classification • Psychostimulants	• Ch 7 • Ch 9
Feb 23	**READING WEEK (no class)**	
Mar 2	• MIDTERM EXAM	• Ch 2-7
Mar 9	• Important topics in addiction research: Focus on *psychostimulants*	• Ahmed & Koob, 1998 • Deroche-Gamonet, 2004
Mar 16	• RESEARCH TUTORIAL	
Mar 23	• Opioids • Important topics in addiction research: Focus on *opioids*	• Ch. 10 • Siegel, 1976; Siegel et al, 1982

Mar 30	• Psychotomimetics, psychedelics, and hallucinogens • Important topics in addiction research: Focus on *cannabinoids*	• Ch 11 • De Vries et al, 2001; De Vries et al, 2003
April 9	• REVIEW FOR EXAM	