

**THE UNIVERSITY OF MICHIGAN**  
**PSYCHOLOGY 436: DRUGS OF ABUSE, BRAIN and BEHAVIOR**  
*(An introduction to the neuropsychopharmacology of drug abuse)*

**COURSE OUTLINE, WINTER 2009**

**Instructor:** Professor Terry E. Robinson  
**Office:** 4024 East Hall (EH)  
**Office Hours:** By appointment (Phone: 763-4361; e-mail: ter@umich.edu)  
**Lecture:** Tues. and Thurs., 4 - 5:30, 1324 EH

**Graduate Student Instructor:** Jakub Jedynak (e-mail: jjedynak@umich.edu)  
**Office:** 4012 East Hall  
**Office Hours:** Wednesdays 3-5 or by appointment

**Course Description**

This course provides a basic introduction to the neuropsychopharmacology of drug abuse and addiction, and has a strong *natural science* (neuroscience) orientation. Prerequisites include Psychology 230 (Introduction to Biopsychology) and an interest in biological approaches to the study of behavior. Introductory Biology and Chemistry are also recommended. The acute and long-term effects of selected drugs of abuse on behavior, mood, cognition and neuronal function are discussed, and material from studies with humans is integrated with basic studies on the neurobiological basis of drug action and drug abuse -- including detailed coverage of synaptic transmission and the distribution, regulation and integration of brain neurotransmitter systems. The focus is on addictive or illicit drugs, and all the major classes are discussed, including: opiates (heroin, morphine, opium), sedative - hypnotics (alcohol, barbituates, chloral hydrate), anxiolytics (benzodiazepines), psychomotor stimulants (amphetamine, cocaine), marijuana, hallucinogens (LSD, mescaline), hallucinogenic-stimulants (MDA, MDMA), and dissociative anaesthetics (PCP).

A lecture format is used, with required readings from a text. The class is intended primarily for juniors or seniors concentrating in biopsychology, neuroscience, biology or the biomedical sciences (eg., pre-med).

**Required Text**

JS Meyer & LF Quenzer, *Psychopharmacology*, Sinauer, 2005. (ISBN 0-87893-534-7)

You can also access the syllabus, grades and Powerpoint Presentation files through CTools:

(<https://ctools.umich.edu/portal>). This site provides the outline of each lecture and most of the illustrations used in lecture. These can be printed either showing all the images, or in outline format. It is highly recommended you do this and then use the hardcopy in lecture to take additional notes. I find that the "Print What" option for "Handouts - 3 or 4 slides per page" works best. With 1 slide per page you have way too much paper and with more than 3 slides per page there is not enough room for your notes. The Powerpoint presentation files will be available at least 24 hours before the lecture they accompany.

**Exams and Grading**

The course grade will be based on the outcome of three multiple choice/short answer type exams.

- The first exam will be on **Feb. 3** and will cover material presented up to that time. The first exam will be worth 25% of the final grade.
- The second exam will be on **Mar. 12** and will cover material presented since the first exam. The second exam will be worth 35% of the final grade.
- The third exam will be on **Apr. 21**. The third exam will be worth 40% of the final grade and will cover material presented since the second exam (i.e., it will not be cumulative).

Grades will be based *only* on performance on the exams. There will be NO opportunity to re-take an exam or to write a paper to "improve" a grade (i.e., the grade is based on *performance*, not *effort*). Note the days for exams and arrange travel schedules accordingly, because requests to take exams at other times will not be granted. In past years the average grade in this class has been B-.

**COURSE SCHEDULE AND READING LIST**

<b>Date</b>	<b>Topic</b>	<b>Reading from Meyer &amp; Quenzer</b>
<b>Introduction to Psychopharmacology</b>		
1/8	Principles of Pharmacology I. Drug nomenclature & classification	Ch 1
1/13	Principles of Pharmacology II. Pharmacokinetics	Ch 1
1/15	Principles of Pharmacology III. Pharmacodynamics	Ch 1
1/20	Principles of Behavioral Pharmacology	Ch 4 (pp. 105-116)
<b>Introduction to Synaptic Transmission</b>		
1/22	Synaptic transmission. I. Synapses & Neurotransmitters	Ch 2 & 3 (pp 63-72)
1/27	Synaptic transmission. II. Receptors and Signal Transduction	Ch 3 (rest)
1/29	Synaptic transmission. III. Techniques	Ch 4: pp 90-105
<b>2/3</b>	<b>Exam # 1 (25% of final grade)</b>	
<b>The Neuropsychopharmacology of Selected Drugs of Abuse</b>		
2/5	Psychostimulants. I. Pharmacology of amphetamines and cocaine	Ch 11 (pp 275-280, 292-295)
2/10	Psychostimulants. II. Amphetamines and cocaine	Ch 5
2/12	Psychostimulants. III. Catecholamines	Ch 11 (pp 280-292)
2/17	Psychostimulants. IV. MDMA ("Ecstasy")	Ch 11 (295-300)
2/19	Opiates. I. Pharmacology and behavioral pharmacology	Ch 10
2/24-26	<i>Spring Break</i>	
3/3	Opiates. II. Actions. Peptide transmitters	Ch 10
3/5	Opiates. III. Actions. Endogenous opioids,	Ch 10
3/10	Nicotine & Acetylcholine neurotransmission	Ch 12 nicotine section) & 6 (Ach section)
<b>3/12</b>	<b>Exam # 2 (35% of final grade; NOTE only covers material through 3/10)</b>	
3/17	Sedative-hypnotics and anxiolytics. I. Alcohol	Ch 9
3/19	Sedative-hypnotics and anxiolytics. II. Barbiturates, benzodiazepines	Ch 17 & GHB section in 15 & Box 15.1
3/24	Sedative-hypnotics and anxiolytics. III. Mechanisms of action. GABA Neurotransmission	Ch 7 (GABA section)
3/26	Marijuana and the Cannabinoids	Ch 13
3/31	Phencyclidine, Ketamine, and Glutamate	Ch 14 (PCP & ketamine section) & 7 (glutamate section)
4/2	Inhalants	
4/7	Hallucinogens I. (LSD, mescaline, etc.)	Ch 14 (Hallucinogens section)
4/9	Hallucinogens II. Actions. Serotonin Neurotransmission	Ch 6 (serotonin section)
	<b>Theories of Addiction</b>	
4/14	Theories of Addiction. I.	Ch 8
4/16	Theories of Addiction. II.	Ch 8
4/21	<b>Exam # 3 (40% of final grade; NOTE only covers material since Exam 2)</b>	