PS 333 B1 - Drugs and Behavior

Time: Tues-Thurs 12:30-2:00, CAS 316 Instructor: Prof. Michael Hasselmo, http://people.bu.edu/hasselmo/
e-mail: hasselmo@bu.edu (e-mail is the best way to contact me) Tel: 353-1397 Office hours: Tues- Thurs 2-3 pm, Wed 10:30-11:30 am, Room 105E, 2 Cummington St. Prerequisites: PS 101 only, but Physiol. Psych is very helpful. Text: A Primer of Drug Action (9th Edition) by Robert M. Julien. Available at Barnes and Noble in Kenmore Square.

Grading: TWO MID-TERM EXAMS and a FINAL EXAM each worth 1/3 of grade. All are multiple-choice exams with questions based on lecture materials and reading. Exam scores will be posted on the PS333 B1 site on courseinfo.bu.edu. Missed exams require medical note for taking make-up exam near end of course (before final). Attendance is expected at all meetings of course. Students should know and understand the CAS Academic Conduct Code available in CAS Rm. 105.

Topic: Overview of the effect of drugs on neurophysiology and behavior. Students will learn the anatomical distribution of neurotransmitters and neuromodulators, physiological effects of drugs recorded in vivo and in vitro, behavioral evidence on the role of specific drugs, the diagnostic indications of specific mental and neurological diseases, and the generic and trade names of numerous drugs commonly used to treat specific individual disorders. Lecture notes are distributed via e-mail at regular intervals and before each exam.

Course outline:

Dates: Topic: Reading:
Sept. 4th Introduction, course overview, sign in students from waiting list
Sept. 9tu Neuroanatomy and Neuron structure Chapter 3
Sept. 11th Neuron membrane potential (action potentials) Chapter 3 and handouts
Sept. 16tu Synaptic transmission (synaptic potentials) handouts
Sept. 18th Principles of drug action (delivery, lipid solubility) Chapter 1
Sept. 23tu Drug-receptor interaction, metabolism and excretion Chapter 2

I. AMINO ACID NEUROTRANSMITTERS

Sept. 25th Glutamate - AMPA and NMDA receptors pp. 80-85 (in chapter 3)
Sept. 30tu GABA – GABAA and GABAB receptors pp. 42-45 (chapter 2)
Oct. 2th Barbiturates and benzodiazepines Chapter 5
Oct. 7tu Anxiety disorders Chapter 6, Chapter 19 (esp. pp. 561-568)

Oct. 9th EXAM #1 (one hour -- all topics covered before this date)
Oct. 14tu No class – Substitute Monday schedule of classes
Oct. 16th Alcohol – and effects on GABAA receptor Chapter 4

II. ACETYLCHOLINE.

Oct. 21tu Physiology and anatomy of acetylcholine, muscarinic drugs pp. 70-74, pp. 330-334
Oct. 23th ACh and memory, effects of nicotine and caffeine Chapter 8

III. CATECHOLAMINES

Oct. 28tu Anatomy and physiology of catecholamines, Parkinson’s disease pp. 74-79, Chapter 18
Oct. 30th Cocaine and amphetamines, ADHD and Ritalin Chapter 7
Nov. 4tu Schizophrenia – symptoms and treatment Chapter 17, Chapter 19 (esp. pp. 558-561)
Nov. 6th Neurochemical bases of schizophrenia Chapter 17
Typical and atypical antipsychotics

Nov. 11tu EXAM #2 (one hour – on topics covered since Exam #1)
Nov. 13th Marijuana Chapter 11

IV. SEROTONIN

Nov. 18tu Anatomy and physiology of serotonin, Hallucinogens pp. 78-80, Chapter 12
Nov. 20th Affective disorders, MAOIs, tricyclic antidepressants Chapter 15, and pp. 554-558
Nov. 25tu Selective serotonin reuptake inhibitors Chapter 15
Nov. 27th No class – Thanksgiving Holiday
Dec. 2 tu Treatment of bipolar disorder: lithium Chapter 16

V. NEUROACTIVE PEPTIDES

Dec. 4th Anatomy and physiology of neuropeptides. Chapter 9, 14
Dec. 9tu Hormones & reproduction, psychoneuroimmunology Chapter 14
Dec. 11th Opiate analgesia and addiction Chapter 9.

Dec. 17wed FINAL EXAM (one hour – on topics covered since Exam #2 – non-cumulative) Wed. 3-5pm