Neuropsychopharmacology 830:412:01

Syllabus Fall 2012

Class Meeting Times: 5:00-6:20, Tue/Thur
Location: SEC 207

Prerequisite: Physiological Psychology (830:313)

Instructor: Alexander Kusnecov, Ph.D., Associate Professor and Vice Chair Undergraduate Studies
Campus Location: Room 233a, Psychology Bldg, Busch Campus
Office Hours: Tuesday 10:00 - 11:30

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Special Note: There is a strict adherence to the prerequisite. Students are expected to remember basic information gained from Physiological Psychology and/or other relevant courses, if by permission they have been allowed to register for this class. The instructor will not review basic electrophysiology and the basis of the action potential, and will use terms (eg., depolarization, hyperpolarization) that students will be expected to recall from prior classes. In addition, certain neuroanatomical terms should be familiar to the student (eg., anterior, posterior, diencephalon, mesencephalon).

Textbook:
Essential Psychopharmacology: Neuroscientific Basis and Practical Applications, 3rd Edition, by Stephen M. Stahl; Cambridge University Press, 2008

Additional Readings: there will be papers posted on sakai mid-way through the course to allow students to appreciate topics not fully discussed in the book

Course Description: Our understanding of the biological basis of behavior ultimately culminates with a focus on the neurochemistry of the brain, and how this serves as the basis for communication between neurons. Neuropsychopharmacology investigates various aspects of neurochemistry, focusing on how drugs are used to affect chemical transmission in the brain, producing changes in motor behavior, cognition and emotion. Consequently, the application of neuropsychopharmacology is highly visible in the medical fields of Psychiatry and Neurology, where psychopharmacological treatments serve as the main form of therapy for a variety of disorders. The course will, therefore, focus on the psychopharmacological basis of treating depression, bipolar disorder, anxiety disorders, schizophrenia, neurodegenerative diseases, such as Alzheimer's disease, and substance abuse.

Learning Goals

Students should come away with an understanding of the following:

1. The neurochemistry and molecular biology underlying neuronal communication
2. The manner in which clinically used therapeutic drugs alter various aspects of behavior, including mood and cognition
3. Critical issues involved in deciding which drugs are effective in treating particular types of psychiatric disorders
4. The development of the nervous system and its relevance to psychiatric disease
5. The neurobiological and neurochemical explanations proposed for psychiatric disorders
6. The importance of behavioral neuroscience research in humans and laboratory animals to understanding abnormalities in behavior

Exams

There will be three exams: two midterms, and one Final, which will not be cumulative. Exams 1 and 2 will each be worth 30% of the total grade. The Final Exam will be worth 40% of the total grade.

All exams will require written answers. There will be no multiple choice questions.

Makeup Exams: After providing acceptable evidence for missing a scheduled exam, a student must take the makeup *within three weekdays* of missing the exam. Otherwise, the makeup will have to be taken between the final class and the Final Exam. There will be no makeup exams for Exams 1 and 2 after the Final. If you miss the Final Exam for an acceptable reason, you must take this *within 48 hrs*. If you have athletic or religious obligations that will occur on any of the scheduled exams, anticipate the interruption and take the exam prior to the scheduled exam date.

Course Content and Skipping Classes: The course will be a mix of material from the textbook and a supplementary information supplied in lecture. The content of the lecture notes will not always correspond with the textbook, which means that students will be required to read sections of the textbook as part of private study, while also attending to the material given in lectures. The sections of the textbook not covered in lecture will be examinable. Slides will be posted on the sakai site for the course. With the exception of the first set of slides, each slide set will be assigned a password (given out in class – and never given by email or on sakai).

Grading System: Students will need to achieve predetermined cut-off points for grades of A, B+, and so on. Cut-off points will be as follows:
A 90-100   B+ 85-89.9   B 75-84.9   C+ 70-74.9   C 60-69.9   D 50-59.9   F <50

Major Lecture Topics and Reading

Section A (Total Lectures: 8)

Reading: Selective material from Chapters 1-5

Topics covered prior to Exam 1:

1.   Neurons: morphology and relevance to function
2.   Development of the nervous system
3.   Neurotransmitters, neuroanatomical distribution and methodology
4.   Neurotransmitter receptors and signal transduction

EXAM 1 (Tuesday October 2)   30 % of total grade

Section B (Total Lectures: 9)

Reading: Selective Material from Chapters 6,7, 8, 9, 10, 14

6.   Drug actions at neurotransmitter receptors
7.   Neurobiological Principles of Psychiatric Disease
8.   Genetics of behavior: Relevance to psychiatric disease
9.   Psychotic Disorders: Schizophrenia

EXAM 2 (Tuesday November 6)   30 % of total grade

Section C (Total Lectures: 9)

NOTE: no class on Thursday Nov 22 due to Thanksgiving break

Reading: Selective Material from Chapters 11, 12, 18, 19

10.   Anxiety, Fear and Stress: Neuroanatomy and Neuropharmacology
11.   Mood Disorders (eg., Depression): Neuroanatomy and Neuropharmacology
12.   Neuroinflammation: Immune Responses in the Brain
13.   Neurodegenerative Disorders: Alzheimer's disease

FINAL EXAM – date to be announced   40% of total Grade