PHARM 780 (NSCI706)
CNS PHARMACOLGY: FROM NEURONS TO BEHAVIOR

Course Description: This course is an exploration of the neurobiology and pharmacology of the brain and its functional output (behavior). The first half of the course will examine the anatomy, biochemistry, molecular biology, and pharmacology of selected brain neurotransmitter systems. The second half of the course will study the interactions between drugs, neurotransmitters and the environment that influence behavior.

Credit Hours: 3

Course Prerequisites: CNS702 or permission of the course director

Course Dates: Fall Semester (August 16 – December 21, 2010)

Course Times: To Be Arranged

Course Location: G301

Director:

W. Woolverton, Ph.D.
Professor of Psychiatry and Human Behavior
Vice-Chairman of Research CPN Behavioral Core Leader
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Office hours on request

Required Text and Other Learning Resources:
Textbook: Iverson, L.L., Iverson, S.D., Bloom, F.E., and Roth, R.H.: ***Introduction to Neuropsychopharmacology***. Oxford University Press, 2009.

Other Readings

Cooper, J.R., Bloom, F.E., and Roth, R.H.: ***The Biochemical Basis of Neuropharmacology***. 8th ed., Oxford University Press, New York, 2003

Kandell, E.R., Schwartz, J.H., Jessell, T.M.: ***Principles of Neural Science,*** 4th Ed., McGraw-Hill, New York, 2000.

Leonard, B.E.: ***Fundamentals of Psychopharmacology,*** 3rd Edition, John Wiley and Sons, Inc., Hoboken, NJ 2003.

Stahl, S.M.: ***Essential Psychopharmacology. Neuroscientific Basis and Practical Applications***, 2nd Ed., Cambridge Univ. Press, Cambridge, UK, 2000.

Course Overview: The course is an exploration of the neurobiology and pharmacology of the brain and its functional output (behavior). The first half of the course will examine the anatomy, biochemistry, molecular biology, and pharmacology of selected brain neurotransmitter systems. The second half of the course will study the interactions between drugs, neurotransmitters and the environment that influence behavior.

Course Objectives: Upon completion of this course, the student will be able to

1. describe the basic anatomy, neuropharmacology and molecular biology of the brain.
2. describe drug interactions with the brain at the anatomical, pharmacological and molecular levels.
3. describe the basic study of behavior and output of the brain.
4. establish the relationship between drug effects in the brain and changes in behavior.

Grading Policy and Rubric.

There will be two written tests; a mid-term worth 40% and a cumulative final worth 60% of the final grade. In-class quizzes may be given; scores on quizzes will be added on a weighted-basis (points earned over total possible points) into the final score.

Course Policies:

Students are expected to actively participate in class discussions. This will require attendance at all class sessions and preparation of the assigned readings prior to class. Make-up tests will only be given in the case of severe illness; assignments are due on the assigned date.

University Policies:

Students with disabilities (ADA) statement, Refer to UMC policy
Academic honesty statement, Refer to UMC policy

PHARM780/NSCI706Course /Schedule:

Section I. Molecular, Cellular, and Neuropharmacology
Section Leader: S. Regunathan

Session	Topic	Instructor
1	Cellular and Molecular foundations	Paul
2	Introduction to brain systems	Rajkowska
3	Receptors	faculty
4	Acetylcholine	faculty
5	Amino acid neurotransmitters	Karolewicz
6	Catecholamines	faculty
7	Serotonin	Iyo
8	Serotonin	Iyo
9	Neuropeptides	Gomez-Sanchez
10	Neuropeptides/Histamine	Gomez-Sanchez
11	Purinergic pharmacology	faculty

12 Other interneuronal signals
Iyo

13 Student Presentations
Section faculty

14 Exam

Section II. Psychiatry and Neurology
Section Leader: G. Bissette

15 Principles and methods of behavioral pharmacology
Paul/Woolverton

16 Principles of CNS drug development
Faculty

17 Antidepressants
Paul

18 Anxiolytics
Karolewicz

19 Antipsychotics
Bissette

20 Cognitive disorders
Vig

21 Movement disorders/Epilepsy
Vig

22 Sleep
Shaffery

23 Pain
Ma

24 Student presentations
Section faculty

25 Exam

Section III. Substance Abuse
Section Leader: W. Woolverton

26 Recreational psychoactive drugs
Woolverton

27 Psychostimulants
Woolverton

28 Psychostimulants
Woolverton

29 Heroin and other opiates
Freeman/Woolverton

30 Psychedelics
Freeman/Woolverton

31 Thanksgiving

32 Cannabis
Cobb/Woolverton

33 Alcohol
Miguel-Hidalgo

34 Nicotine
Liu

35 Drug-induced neurotoxicity
Miguel-Hidalgo

36 Student presentations
Section Faculty

37,38 Exams

J. Shaffery, D. Phil. - Psychiatry
G. Bissette, Ph.D. - Psychiatry
P. Vig, Ph.D. - Anatomy
K. Freeman, Ph.D. - Psychiatry
J Cobb, Grad Student
K Wallace – Grad Student

This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent