

PSYC380B Neuropsychopharmacology

Jom Hammack Ph.D.
John Dewey Hall 336
Voice: 656-1041
E-mail: shammack@uvm.edu

Office hours: By appointment only
(I can be flexible)

Psychoactive drugs are substances that alter mood, consciousness, and/or behavior, which they accomplish by modifying existing pathways in the brain. Most commonly, psychoactive drugs alter the processes involved in the synaptic transmission of neurotransmitters. In this course we will examine the major neurotransmitters systems of mammalian brains, discussing the pharmacology of each system, and the role of each in normal and abnormal behavior.

I will attempt to make this course relevant to both basic researchers and clinicians, and will be careful to assign articles and promote discussions that interest both groups. Although this course will be grounded in behavioral neuroscience, I invite constructive feedback/advice from students about how to make the course more relevant to clinicians. Please feel free to talk about the course with me throughout the semester.

Each week, the first part of class may be devoted to some lecture. I hope that students will feel free to interrupt me during lectures to clarify important points or perhaps discuss certain topics in greater detail. There will be several readings assigned weekly. The second part of each class will be devoted to the discussion of these readings.

I expect that each of us will adhere to the UVM classroom code of conduct. Please silence all cell-phones and other electronic devices. Please do not use devices in class that may be disruptive to others.

Required Text:

There will be no required text for this course. Required readings will be posted on Blackboard.

Grading:

Participation (30%)

- You will be expected to attend each class, and participate in discussions both during lectures and our discussion of the weekly readings (15% of your grade).
- There may also be weekly assignments post on Blackboard that will be included in your participation grade (15% of your grade).

Led Discussion (20%)

- On the first day of class we will pass around a signup sheet, which I will post on Blackboard. Groups will lead discussions on the listed weeks (bigger groups will be responsible for covering more weeks).
- For each week that your group is responsible for, one member of the group must submit to me (via email) two empirical articles that relate to that week's topic, as well as at least two discussion questions. Your group may divvy up the responsibilities (choosing articles, creating discussion questions/, leading discussions in class) however you wish, but *each group member must have a noticeable role in the classroom discussion for at least one of the weeks that the group is responsible*.
- These items must be submitted to me before the start of class ONE WEEK PRIOR to the class in which materials will be discussed.

(I will also be assigning 1-2 review articles each week. All of these will be posted on Blackboard.)

Review Paper (30%)

Each student will be responsible for writing a 10-20 page review paper on a topic related to this course. We will discuss the writing of this paper in class. You will be required to hand in at least one draft prior to the final paper, but I am willing to look at multiple drafts. I will allow some flexibility regarding the topic, but I must approve it beforehand.

Quizzes (20%)

There will be 4 in-class quizzes throughout the semester. Prior to each I will post a review sheet describing the material you will be expected to know.

Grade Breakdown

Review Paper	30%
Led discussion	20%
4 Quizzes	20% (5% each)
Participation	30% (15% from "in class" participation, 15% from online assignments)

Schedule

January	20	Review of Neuroscience Pharmacodynamics Synaptic transmission Ion channels	
	27	Principles of Pharmacology Pharmacokinetics Tolerance and Withdrawal Placebo	
February	3	Addiction Criteria Theories	
	10	Acetylcholine Synthesis, release, inactivation Receptor subtypes Cholinergic Pathways: Central and Peripheral	<i>Quiz, Paper Topic due</i>
	17	Nicotine Pharmacology Mechanisms of action Use and Dependence	
	24	Amino Acid Neurotransmitters: Glutamate Synthesis, release, inactivation Receptor subtypes and pharmacology Glutamate pathways	
March	3	Amino Acid Neurotransmitters: GABA Synthesis, release, inactivation	<i>Quiz</i>

	Receptor subtypes and pharmacology	
	GABA pathways	
	10 NO CLASS: Spring Break	
	17 Alcohol	
	Pharmacology	
	Mechanisms of action	
	Use and Dependence	
	24 Opiates	<i>Draft of Paper due</i>
	Synthesis, release, inactivation	
	Receptor subtypes and pharmacology	
	Endogenous opioid systems	
	31 Dopamine	
	Synthesis, release, inactivation	
	Receptor subtypes	
	Dopamine pathways and disorders of dopamine systems	
April	7 Norepinephrine	<i>Quiz</i>
	Synthesis, release, inactivation	
	Receptor subtypes and pharmacology	
	Norepinephrine pathways	
	14 Cocaine and Amphetamine	
	Pharmacology	
	Mechanisms of action	
	Use and Dependence	
	21 Serotonin	
	Synthesis, release, inactivation	
	Receptor subtypes and pharmacology	
	Serotonin pathways	
	28 Antidepressants	<i>Quiz, Final Paper due</i>
	Pharmacology	
	Mechanisms of action	
	Depression and Anxiety	