

Syllabus
Behavioral Pharmacology (PSYC 5620/6620)
Spring 2008

- Course Title:** Behavioral Pharmacology (PSYC 5620/6620)
- Instructor:** Christopher Newland, Ph.D.
Department of Psychology
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844-6479 (office) 844-3295 (lab)
- Meeting Times:** 1:00-1:50, MWF
- Room:** Room 202, Thach Hall
- Electronic Resource:** Materials for this course and announcements are on BlackBoard
- Required Text:** *Psychopharmacology: Drugs, the Brain, and Behavior*
Jerrold S. Meyer and Linda F. Quenzer
Sunderlan, MA: Sinauer Associates. 2005
- Selected Readings*
- HIGHLY RECOMMENDED** An excellent reference for those with clinical interests:
A Primer of Drug Action. Robert M. Julien. New York: Freeman.
- GTA** Erin Pesek (pesek@auburn.edu)
- Office Hours:** Dr. Newland: Monday, M. W. 10:00-11:00 or by appointment.
Erin Pesek. By appt. Phone 844-3295 or email pesek@auburn.edu

COURSE DESCRIPTION (from catalog): A review of drugs that affects nervous system function and behavioral or neural mechanisms that modify these effects. Topics include substance abuse, preclinical and clinical psychopharmacology, learning and memory, behavioral mitigation of drug effects. Meets APA criteria for Level I training in psychopharmacology.

COURSE OBJECTIVES: Behavioral pharmacology is the study of the interaction between behavior and drugs that act on the nervous system. The study of psychopharmaceuticals spans many disciplines and can be conducted along any of several levels of analysis, ranging from changes in minute elements of the cell membrane to global issues like the sociology of substance abuse. In behavioral pharmacology and psychopharmacology, we emphasize the actions of drugs on the behaving individual (human or nonhuman), and how the particulars of ongoing behavior can actually influence these actions. In order to understand the behavior of an individual we will draw from the study of neural function, behavioral determinants of action, as well as social influences. In this course we examine behaviorally active drugs, their clinical utility, their actions on the nervous system, experimental approaches to characterizing drug-behavior interactions, and clinical applications.

COURSE STRUCTURE: The course will be organized around the textbook and selected readings. This is a course for both graduate and advanced undergraduate students, and at this level I feel that it is important to provide new material and an opportunity to learn how some of the information that we review is discovered. We will incorporate some readings from the primary literature (basic reports of experiments). Some material is just too newly developed to be included in textbooks. This includes behavioral pharmacology in developmental disabilities and behavioral toxicology.

Class time will be used partly to cover material from the textbook, especially material that might be difficult to get from the book alone. For this I will need your help in letting me know what parts of the book you have difficulty with. I also hope to use some class time to extend the discussion in the textbook either to cover a topic in a little more depth or to discuss a point raised by the authors.

GRADING: UNDERGRADUATES. The course grade for **undergraduates** will be a simple average of six grades. There will be five in-class exams given through the term, including the final exam day. The sixth grade will come from questions or responses on journal articles that we cover. Turn these in by 9:00 on the day of the class on which we cover these articles. These must be submitted on BlackBoard in the appropriately labeled place. The first one is due on 3 March. Turn in ONE QUESTION FOR EACH PAPER.

If you miss an exam due to a university-approved excuse listed in the Tiger Cub then you may make up the exam at the *next* available time. Make-up exams will be provided by the department at a time that will be announced early in the term. Make arrangements *before* the exam for anticipated absences. Make arrangements *the day* of the exam for unanticipated absences, such as an illness. Arrangements should be made with Erin Pesek.

GRADING: GRADUATE STUDENTS. In addition to the undergraduate assignments, students enrolled in PSYC 6620 are required to write a paper on one of the topics listed at the end of this syllabus

Academic Honesty. Cheating is theft and a betrayal of the openness and good-faith required for higher education to function. Cheating will not be tolerated. The policies established in the Tiger Cub will serve as guidelines for dealing with dishonesty. In this course you are encouraged to study together, but all exams and home assignments must be taken on your own unless specified otherwise.

Students with Disabilities. Students with a disability documented by Auburn's Program for Students with Disabilities should schedule a meeting with me early in the term. I will work with the student to meet the accommodations recommended by the Program for Students with Disabilities.

Potential Term Paper Topics.

1. Behavioral tolerance.
2. Drug effects on learning or memory.
3. Reinforced abstinence in the treatment of substance abuse.
4. Environmental prostheses: Contextual control as a mediator of drug effects.
5. Preclinical behavioral pharmacology of a drug class (you pick the drug class).
6. Developmental neurotoxicology of a selected drug or toxicant
7. Pharmacotherapy in developmental disabilities.
8. Behavioral/environmental modifiers of pharmaco-therapeutics.
9. Drugs and respondent conditioning (huge topic that needs narrowing).
10. Respondent processes and substance abuse.

11. Drugs and/or brain injury—their effects on choice or self-control.
12. Behavioral pharmacology of substance abuse (check with the instructor to focus this).
13. Drugs as discriminative stimuli. (you may choose a particular drug class and describe the discriminative/subjective effects of that.)
14. Drug effects on motor function.
15. Rate dependent effects of drugs.
16. Specificity of anti-punishment effects of drugs.
17. Drug/behavior therapy of one of: ADHD, anxiety disorders, schizophrenia, disorder of your choice (with instructor's approval).
18. Drugs and sleep.
19. Drugs (neuroleptics or anticonvulsants would be good ones) and repeated acquisition and learning
20. Psychomotor stimulants and impulsivity
21. Topic of your choice, with approval of instructor.

Schedule of Activities

| Wk | Class | Date | Topic | Chapter/ Readings |
|----|-------|--------|---|----------------------|
| 1 | 1 | 9 Jan | Introductory comments. | 1 |
| | 2 | 11 Jan | Pharmacokinetics: Drug uptake, distribution, and elimination. | 1 |
| | 3 | 14 Jan | Pharmacodynamics: Drug-receptor interactions | 1 |
| 2 | | 16 Jan | Tolerance and Sensitization. | |
| | 4 | 18 Jan | Cells of the nervous system. | 1 |
| | 5 | 21 Jan | MLK day. No class. | 2 |
| 3 | 6 | 23 Jan | Resting and action potential | 2 |
| | 7 | 25 Jan | Organization of the nervous system./autonomic NS. | 2 |
| | 8 | 28 Jan | Neurotransmission: Pre-synaptic actions | 3 |
| 4 | 9 | 30 Jan | Neurotransmission: Receptor mechanisms | 3 |
| | 10 | 1 Feb | EXAM 1. (9 classes) | |
| | 11 | 4 Feb | Neurochemical methods. | 4 |
| 5 | 12 | 6 Feb | Behavioral methods, drug development. | 4 |
| | 13 | 8 Feb | Behavioral methods. Library methods. | 4 |
| | 14 | 11 Feb | Catecholamines: Neuropharmacology. | 5 |
| 6 | 15 | 13 Feb | Catecholamines: Behavioral actions | 5 |
| | 16 | 15 Feb | Acetylcholine | 6 |
| | 17 | 18 Feb | Serotonin: Neuropharmacology | 6 |
| 7 | 18 | 20 Feb | Glutamate and long-term potentiation CALABA | 7 |
| | 19 | 22 Feb | GABA CALABA | 7 |

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|----|----|--------|--|----------|
| | 20 | 25 Feb | EXAM 2 (9 classes) | |
| 8 | 21 | 27 Feb | Substance abuse | 8 [1] |
| | 22 | 29 Feb | Substance abuse | 8 |
| | 23 | 3 Mar | Reinforced abstinence | [2] |
| | | | Therapeutic workplace | [3] |
| 9 | 24 | 5 Mar | Behavioral economics. | [4] |
| | 25 | 7 Mar | Ethanol | 9 |
| | 26 | 10 Mar | Ethanol. | 9 [5] |
| 10 | 27 | 12 Mar | Psychomotor stimulants (cocaine) | 11[6] |
| | 28 | 14 Mar | Psychomotor stimulants (amphetamines) (Mid-Semester) | 11 |
| | 29 | 17 Mar | Spring break: 17-21 March | |
| 11 | 30 | 24 Mar | EXAM 3 (9 classes). | |
| | 31 | 26 Mar | Anxiety disorders | 17 |
| | 32 | 28 Mar | Anxiety disorders | 17, [7] |
| | | | Schizophrenia | 18 |
| 12 | 33 | 31 Apr | Schizophrenia | 18 |
| | 34 | 2 Apr | Overflow. | |
| | 35 | 4 Apr | Drugs as discriminative stimuli. Drug discrimination. | [8] |
| 13 | 36 | 7 Apr | Drugs as discriminative stimuli: Drug discrimination. | [9] |
| | | | Subjective effects of drugs | [10] |
| | 37 | 9 Apr | Drugs as participants in equivalence networks. Rochester | [11] |
| | 38 | 11 Apr | EXAM 4 (9 classes) Rochester | |
| 14 | 39 | 14 Apr | Learning and repeated acquisition. | [12] |
| | 40 | 16 Apr | Drugs, stimulus control, and switching. | [13] |
| | | | Behavioral prostheses and behavioral tolerance. | [14] |
| | 41 | 18 Apr | Behavioral toxicology: animal models of lead and MeHg exposure | [15, 16] |
| 15 | 42 | 21 Apr | Papers due for graduate students. Behavioral toxicology: human exposures. | [17, 18] |
| | 43 | 23 Apr | Environmental causes of developmental disorders. | [19] |
| | 44 | 25 Apr | Behavioral pharmacology and developmental disabilities: Strategies [Matson et al., Handen and | [20, 21] |

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|----|----|--------|---|--------------|
| | | | Gilchirst] | |
| 16 | 45 | 28 Apr | Behavioral pharmacology and developmental disabilities. Specific studies.[Valdovinos, Crosland, Hellings] | [22, 23, 24] |
| | | 4 May | EXAM 5. Saturday, 3 May 2008 2:00 - 4:30 (7 classes) | |

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