

## **PSY 627 - Proseminar in Physiological Psychology**

**Class hours:** Monday 1-3:30

**Classroom:** Kastle Hall room 210

Dr. Mark A. Prendergast

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Dr. Mike Bardo

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**Required Textbook:** *Physiology of Behavior*, 11th Edition, by Neil R. Carlson

**Outline:** This class provides an introduction to structural and functional characteristics of the nervous system. The emphasis is on exploring the relationship between brain and behavior. Topics range from simple brain structures and behaviors to more complex functions such as drug addiction and other psychiatric illnesses. The biological basis of normal and abnormal behavior is explored from a multidisciplinary perspective.

**Student Learning Outcomes:** After completing this course, the student will be able to (1) describe the primary anatomical and physiological components of the central nervous system; (2) Understand the role that such components play in behavior; (3) Describe the nature of brain pathologies in major psychological diseases, the behavioral correlates and the pharmacological or biological treatment of these pathologies.

**Attendance:** Attendance is not a course requirement. However, the material discussed in class is always heavily represented on exams. If you must miss a class, we strongly recommend getting the class notes from someone else.

**Accommodation Due to Disability:** If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, email address: [jkarnes@email.uky.edu](mailto:jkarnes@email.uky.edu)) for coordination of campus disability services available to students with disabilities.

**Blackboard:** We will use the Blackboard email distribution system for all class announcements and to post all lectures.

**Cheating:** Cheating is not tolerated. Cheating as either giving or receiving help during exams or during the writing of a paper. This can be from a classmate or any other method. In addition, any written assignment for this class is to be done independently and working on written assignments together also constitutes as cheating. If you need further clarification of what the University defines as cheating, please read the description in your Students Rights and Responsibilities Handbook. Anyone caught cheating will at minimum receive a zero and likely fail the course.

**Grading:** Your grade will be based on the % correct on 3 exams, including the final (100 points each, a total of 300 points), and completion of 3 “thought papers” based on readings of the primary literature. Each exam will consist of multiple choice, short answer and/or essay questions. If an emergency arises and you must miss class on an exam day, please let me know prior to class. Make-up exams should be scheduled as soon as possible. Final grades will be assigned on a curve based upon overall exam performance and completion of all thought papers. Regardless of class performance, however, 90% is guaranteed an “A”, 80% at least a “B”, 70% at least a “C”, 60% at least a “D” and below 60% an E. Each student is required to read 3 primary literature papers throughout the semester, chosen from the list below (pg 3-4), and complete a 5-page thought paper discussing (1) the primary topic of the paper (2) the findings and interpretations of the authors; and (3) their individual interpretations of the data’s relevance to human behavior. Each thought paper must be turned in via e-mail to Dr. Prendergast by 4 p.m. on each Monday before the following week’s exam.

<u>Date</u>	<u>Chapter</u>	<u>Topic</u>	<u>Lecturer</u>
1-18	NO CLASS	Academic Holiday	
1-25	2	Function of the Nervous System and Behavioral correlates	Prendergast
2-1	3	Structure of the Nervous System and Behavioral Correlates	Bardo
2-8	4	Psychopharmacology: The Study of Neurotransmitters and Psychoactive Drugs	Bardo
2-15	9	Sleep and Biological Rhythms ( <i>thought paper #1 due</i> )	Barron
2-22	Exam 1		
2-29	10	Reproductive Behavior	Prendergast
3-7	11	Emotion: Neural Circuitry and Affective Disorders	Barron
3-14	NO CLASS	Spring Break	
3-21	13	Learning and Memory: Structure and Function	Beckmann
3-28	15	Neurological Disorders: Physiological Correlates and Treatment	Prendergast
4-4	Exam 2		
4-11	16,17	Schizophrenia and Affective Disorders: Physiological Correlates and Treatment Anxiety Disorders, Autism Spectrum Disorders and ADHD	Barron
4-18	18	Drug Abuse: Trends, Consequences, and Treatments ( <i>thought papers due</i> )	Bardo
4-25		student's choice/contemporary issues	Prendergast
Friday		<b>FINAL EXAM</b>	

**Thought Papers:** Each student is required to complete 3 “thought papers”, described above based on their reading of one of the following primary literature papers. Students may choose 1 of the suggested papers to read for each of the 3 semester blocks of chapters. Each paper is either freely available to the general public via the website [www.pubmed.com](http://www.pubmed.com) OR is available through the University’s electronic subscription to the journal.

**Block 1 (Chapters 2, 3, 4, 9):** please choose 1 of the following readings to read for your thought paper

- Cole, Yarkoni, Repovs, Anticevic, Braver (2012). Global connectivity of prefrontal cortex predicts cognitive control and intelligence. *Journal of Neuroscience* 32(26):8988-99.
- Hanson, Chung, Avants, Rudolph, Shirliff, Gee, Davidson, Pollak (2012). Structural variations in prefrontal cortex mediate the relationship between early childhood stress and spatial working memory *Journal of Neuroscience* 32(23): 7917–7925.
- Baker, Frith, Frackowiak and Dolan (1996). Active Representation of Shape and Spatial Location in Man. *Cerebral Cortex* 6(4):612-619.
- Gipson and Bardo (2009). Extended access to amphetamine self-administration increases impulsive choice in a delay discounting task in rats. *Psychopharmacology* 207(3):391-400
- Cizza, Requena, Galli, and Jonge (2011). Chronic sleep deprivation and seasonality: Implications for the obesity epidemic. *Journal of Endocrinological Investigation* 34(10):793–800.

**Block 2 (Chapters 10,11,13,15):** please choose 1 of the following readings to read for your thought paper

- Roselli and Stormshack (2009). Prenatal Programming of Sexual Partner Preference: The Ram Model. *Journal of Neuroendocrinology* 21(4):359–364.
- Buss (1988). The Evolution of Human Intrasexual Competition: Tactics of Mate Attraction. *Journal of Personality and Social Psychology* Vol. 54(4):616-628.
- Paul, Schiffer, Zwarg, Krüger, Karama, Schedlowski, Forsting, Gizewski (2008). Brain Response to Visual Sexual Stimuli in Heterosexual and Homosexual Males. *Human Brain Mapping* 29:726–735
- Chao, Lenoci, Neylan (2012) Effects of post-traumatic stress disorder on occipital lobe function and structure. *Neuroreport* 23:412–419
- Buchman, Boyle, Yu, Shah, Wilson, Bennett (2012). Total daily physical activity and the risk of AD and cognitive decline in older adults. *Neurology* 78(17):1323-9.

**Block 3 (Chapters 16,17,18):**

- Beacher, Radulescu, Minati, Baron-Cohen, Lombardo, Lai, Walker, Howard, Gray, Harrison, Critchley (2012). Sex Differences and Autism: Brain Function during Verbal Fluency and Mental Rotation. *PLoS One* 7(6):e38355. doi: 10.1371/journal.pone.0038355
- Yu, Cheung, Chua, McAlonan (2012). Can Asperger syndrome be distinguished from autism? An anatomic likelihood meta-analysis of MRI studies. *Journal of Psychiatry Neuroscience* 36(6):412-421.

-DeLise and Crow (1989). Evidence for a Sex Chromosome Locus for Schizophrenia. *Schizophrenia Bulletin* 15(3): 431-440.

-Littleton JM (2001) Receptor regulation as a unitary mechanism for drug tolerance and physical dependence—not quite as simple as it seemed! *Addiction* 96: 87–101

-Himmelsbach (1941). The morphine abstinence syndrome, Its nature and treatment. *Annals of Internal Medicine* 15(5):829-839.

-Koob GF (2009) Dynamics of Neuronal Circuits in Addiction: Reward, Antireward, and Emotional Memory. *Pharmacopsychiatry*. 42(Suppl 1): S32–S41.

### **Excused Absences:**

Students need to notify the professor of absences prior to an exam when possible. S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit “reasonable cause for nonattendance” by the professor. Senate Rule 5.2.4.2 states that faculty have the right to request “appropriate verification” when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859-257-3737, [http://www.uky.edu/Ombud/ForStudents\\_ExcusedAbsences.php](http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php)).

**Academic Integrity:** Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: <http://www.uky.edu/Ombud>. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Part II of *Student Rights and Responsibilities* (available online <http://www.uky.edu/StudentAffairs/Code/part2.html>) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about the question of plagiarism involving their own work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgement of the fact, the students are guilty of plagiarism. Plagiarism includes reproducing someone else’s work, whether it be a published article, chapter of a book, a paper from a friend or some file, or something similar to this. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be.

Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone. When a student's assignment involves research in outside sources of information, the student must carefully acknowledge exactly what, where and how he/she employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain (Section 6.3.1).