

PSB 4003 -- BRAIN, BEHAVIOR & EXPERIENCE -- 3sh

Course Syllabus

Summer 2005: May 10-June 21

(13 class meetings, including final exam)

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(Subject line entry: Advise Re. PSB 4003) (click on the Resources button for a variety of course-relevant materials, many of which are referred to in class.)

Required Textbook

Kalat, J. W. (2004). *Biological Psychology* (8th ed.). Belmont, CA: Wadsworth/Thomson Learning. Comes with free CD-ROM and InfoTrac College Edition.

Recommended Supplemental Materials

Hull, E.M. (2004). *Study Guide for Kalat's Biological Psychology* (8th ed.). Belmont, CA: Wadsworth/Thomson Learning.

Course Prerequisite and Description

The prerequisite for this course is a college-level class in biology or zoology.

This course surveys the field known as *biological psychology*, and is intended as an introduction to the brain and its relationship to behavior and experience. Topics include: evolution and genetics; the structure and function of the nervous and endocrine systems; sensation and perception; emotion and motivation; consciousness and sleep; learning, memory, and language (when time permits); and psychological disorders.

Biological psychology is truly among the most fascinating subjects in the world.

Consider, for example, the following questions: What are the nervous system mechanisms that allow us to perceive, think about, and to some degree comprehend the universe around us? What are the neural mechanisms of sleep and dreaming, and what are their functions? How do the nervous and endocrine systems regulate emotion and motivation? What alterations of the brain are responsible for psychopathologies such as schizophrenia, depression and Alzheimer's disease? These are some of the stimulating questions we will grapple with during this course.

Primary assumption of this course is that all of our behavior and experience, both normal and abnormal, simple and complex, can ultimately be explained in terms of the basic components of the *nervous and endocrine systems* (and sometimes others as well), and the ways in which these systems interact. This is not at meant to deny the important roles of *experience and learning* in our behavior, cognition, emotion, and motivation, but rather it is a recognition that these influences are dependent upon, and must operate through, our *biological mechanisms*--and in particular the brain.

Mastery of the subject matter of this course is essential to a comprehensive understanding of psychology, and should prove to be of great value to you regardless of your intended specialization. As the famous 19th century physiologist and anatomist Johannes Peter Müller put it: "Nemo Psychologus Nisi Physiologus." Translated this means: "One is not a psychologist who is not also a physiologist." More broadly, one needs to be a biologist. You will no doubt find this course *challenging*, but you will also find it to be among the most *interesting* subjects that you will ever study.

Student Learning Objectives/Outcomes

Objectives of this course are that as a result careful study students should be able to:

1. Describe how *neuroscientists* go about *investigating* the nervous system, as well as the endocrine system;
2. Describe the major *elements* of the nervous and endocrine systems, as well as some of the circuits and interactions both within and between these systems;
3. Describe the major *functions* of the elements of the nervous and endocrine systems with respect to behavior and experience (the mental trilogy of cognition, emotion, and motivation), and explain how these functions are carried out;
4. Describe fundamentally how *all human behavior, thought, and feelings* are the end result of complex patterns of nervous and endocrine system activity;
5. Describe the *causes of major diseases and disorders* of the nervous and endocrine systems, and what can be done to treat and perhaps prevent them.

Mechanisms

Objectives of this course can be achieved through:

1. Carefully studying the *Textbook*;
2. Carefully working through the *Study Guide* and *CD-ROM* for the *Textbook*;
3. Actively thinking about and participating in all *class discussions* of the course material, e.g., by asking and answering questions and contributing insights.

Functions of the class meetings will be to *review, discuss, clarify, and expand upon material in the Textbook*. These meetings will provide an opportunity to *answer questions raised by students and to provide feedback* about your understanding of the course subject matter. When studying the *Textbook*, write down questions about material that you do not understand, or about what you want to know more about. It would be helpful if you indicate the relevant chapter, section, and page number of the *Textbook*. These should be placed on the table or podium at the front of the room before the beginning of each class. I will be depending on you to let me know what parts of the *Textbook* are giving you trouble and what you want to spend the most time discussing. Note: There will be additional and/or more current material covered in class that is not in the course textbook. Students will be expected to know this material for the exams. If you miss a class, be sure to check with other students to learn what you have missed in terms of lecture/discussion material as well as other course relevant information, such as changes in the dates of exams, or assignments to carry out.

Don't be afraid to ask questions and make comments! If you don't understand something in the textbook or class, it is likely that others are having similar problems. And if something interests you, it is almost certainly of interest to others as well.

Learning is facilitated by a dynamic involvement of students in the instructional process: learning is not a spectator sport! Therefore, rather than just lecturing *to* you, I will try to frequently use the *Socratic Method* of teaching by asking questions *of* you. In fact, I will sometimes ask students to try to answer questions raised by their classmates before I contribute any special insights that I might have. In other words, I want you to learn through *actively thinking about, discussing, and contributing to the course material*.

With regard to the Textbook, while I would like students to bring the book to class, I do not think it is the best use of time, or polite, to be reading during lectures unless asked to do so. Rather than trying to follow along in the book, it would be far better to carefully pay attention and outline the major points of the lectures and discussions.

Note: *It is not fair, nor is it helpful, to read an answer from the Textbook when asked a question in class.*

Before coming to class, try to at least skim the Textbook material so that you know what is covered. Then you will not have to spend valuable class time looking at the book when something is being discussed, or trying to take detailed, redundant lecture notes.

What you should be doing in class:

1. *Analyzing, synthesizing, and critically evaluating* the information being discussed, and then *theorizing* about the implications;
2. *Outlining and/or diagramming* the major points being made;
3. *Asking questions for clarification* of points you do not completely understand;
4. *Responding to questions* raised by the instructor and other students;
5. *Sharing additional information or insights* when you have something to contribute.

All of this should make the class far more interesting and informative for everyone. I sincerely want you to find this course both rewarding and productive. Feel free to let me know ways in which the course mechanics might be improved, and please don't wait until the end of the term. I'm open to all suggestions--even in the form of anonymous notes left with a secretary to be placed in my mailbox.

To aid mastering the subject matter of this course, make use of the *CD-ROM* and the *Study Guide for Kalat's Biological Psychology*. They are an excellent means for reviewing your understanding of the material and preparing for class and exams. It should be most useful and pleasant if you discipline yourself to use these tools faithfully, doing a little work several days a week. Do not leave your studying to just before the exams: cramming (massed practice as opposed to distributed practice) is not an effective way to learn, and it can be a very aversive experience! When using the Study Guide, do the odd-numbered questions after reading each chapter, but save the even-numbered questions and do all those together just before the exam as a practice test.

As further aides, I will also provide handouts, or more likely refer to materials posted on my UWF web site, whenever appropriate. In addition, I have a bulletin board located in the hallway on the first floor of the Psychology Building #41. Periodically I post recent articles of interest about biological psychology and related areas. You will probably find many of these informative, if not fascinating--at least I hope you do. Let me know what you think, as well as any ideas that you have to make this bulletin board more useful to students.

Lastly, there are a growing number of excellent Internet resources for this course that can be found in the Textbook and CD-ROM. I have personally found many sites, e.g.: Neurosciences on the Internet at www.neuroguide.com, and its Best Bets at <http://www.neuroguide.com/bestbets.html>;

Whole Brain Atlas at <http://www.med.harvard.edu/AANLIB/home.html>;
 Neuroscience for Kids at <http://faculty.washington.edu/chudler/neurok.html>;
 Interactive Atlases at <http://www9.biostr.washington.edu/da.html>;
 Probe the Brain at <http://www.pbs.org/wgbh/aso/tryit/brain/>;
 Secrete Life of the Brain: 3-D Brain Anatomy at <http://www.pbs.org/wnet/brain/3d/>;
 Anatomy of Primates (w/atlasses) at
<http://spot.colorado.edu/~dubin/bookmarks/b/060.html>
<http://www.indiana.edu/~pietsch/home.html>;
<http://www.med.harvard.edu/AANLIB/home.html>;
 The Human Brain: Dissections of the Real Brain at
<http://www.vh.org/adult/provider/anatomy/BrainAnatomy/BrainAnatomy.html>;
 Visualization of Dendritic Spines at <http://www.synapses.bu.edu/index.asp>;
 Comparative Mammalian Brain Collections at <http://brainmuseum.org/index.html>;
 Digital Anatomist Information System at <http://sig.biostr.Washington.edu/projects/da/>

Grading/Evaluation System

Three objective exams will be given (mostly or entirely multiple-choice). *Exam I* will cover Chapters 1-4; *Exam II* will cover Chapters 5-8; and *Exam III* will cover Chapters 9-12 & 15, plus any additional material that there is time to discuss in class (see the Calendar of Assignments at the end of the syllabus). The first two exams will count 30% toward the course grade, and the third exam will count 40%.

Grades for each exam will be determined by the *percentage* of points earned relative to the *average of the top three scores*. Thus, there is no predetermined distribution of grades--everyone can get an "A" by earning at least 93% of the points relative to the top three performers! Letter grades will be assigned as follows (read the rows left to right):

90%-92% = A-	93%-100% = A	
80%-82% = B-	83%-86% = B	87%-89% = B+
70%-72% = C-	73%-76% = C	77%-79% = C+
60%-62% = D-	63%-66% = D	67%-69% = D+
00%-59% = F		

Instructors cannot post grades or give grades over the phone or Internet, due to University regulations. Students wishing to learn their grade for the last exam of the term and for the overall course grade before the University processes and posts grades, can give the instructor a self-addressed, stamped envelope for this purpose, or send an e-mail request. Note: For confidentiality purposes, the latter should be done only if you are the only one who can read my e-mail reply, and you clearly state this in your e-mail.

Improved exam performance during the term is automatically taken into account, *if notable*, since the last exam is worth 33% more than the others. This gives you a chance to make up for possible underperformance on an earlier exam. If you do poorly

on an exam, talk to the instructor or graduate teaching assistant about better study strategies, and try harder the next time. (See the earlier *Study Guide* suggestions.)

Special Arrangements for Assistance: Students with special needs who require specific examination-related or other course-related accommodations should contact Barbara Fitzpatrick, Director of Disabled Student Services (DSS), at (850) 474-2387. DSS will provide the student with a letter for the instructor that will specify any *recommended accommodations*. Students should attend to this as early as possible. The instructor is not obligated to accommodate a student's needs unless presented with an official letter from the Office of Disabled Student Services.

Attendance and Classroom Courtesy: It is expected that students will regularly come to class prepared and motivated to actively participate in class discussions, exercises, demonstrations, and other activities. This is very important for fostering a productive learning environment in the classroom, and for mastery of the course material. Students should arrive on time so as not to disturb other individuals. If for some unavoidable reason you do come to class late, please enter as quietly as possible and take the seat available nearest to the door (regardless of where you might ordinarily sit). This should minimize disruption of the class. Please show respect for other students and the instructor by refraining from private conversations, reading newspapers, shuffling papers, eating, slurping drinks, chewing gum loudly, and sleeping/snoring during class. *Students who are disruptive will be identified and warned, or asked to leave if they have been previously warned.*

Cell phones, pagers, and watches that beep, ring, or play musical selections are very disruptive in class, and should therefore be turned off. If you are expecting an emergency call, then put your cell phone or pager on silent alarm (vibration), and sit at the back of class so that you can leave the room with minimum disturbance to others. If you anticipate that you will need to leave class early, regardless of the reason, you should provide a written explanation to the instructor before class begins, and then take a seat near the door. As noted earlier, be aware that if for any reason you miss part or all of a class, you will still be held responsible for all material covered and any activities. Check with classmates to see what was missed. If you still have questions, talk to the instructor at the end of the next class meeting or during office hours.

Don't miss exams: Makeup examinations represent an imposition on the instructor and other students. Makeup examinations are based on the instructor's approval and constitute a notable exception if allowed. Therefore, please be forewarned that having other exams, work conflicts, or more pleasant things to do on the same day as a test are not sufficient justification for a makeup exam. On the other hand, illness is sufficient justification. If you are unable to take an exam at the scheduled time, do not call the instructor. You must submit a printed statement (e-mail is fine), no later than the next class meeting, which documents the reason that the exam was missed and when you would be available to take a makeup (ordinarily this will only be possible during my office hours, or those of my graduate teaching assistant). Your printed statement, and possibly a conference, will be used to judge whether a make-up exam will be allowed.

Academic Dishonesty: I am very aware that there is a great deal of pressure to do well in college. But that is never an excuse for cheating on an exam, plagiarizing an assignment, or in any other way being academically dishonest. There are severe penalties for such wrongdoing. Do the right thing and be a good citizen--be honest! You should carefully review the Rights & Regulations section of the *UWF Student Handbook*, from which the following was excerpted.

Expectations for Academic Conduct/Plagiarism Policy: As members of the University of West Florida, we commit ourselves to honesty. As we strive for excellence in performance, integrity—personal and institutional—is our most precious asset. Honesty in our academic work is vital, and we will not knowingly act in ways which erode that integrity. Accordingly, we pledge not to cheat, nor to tolerate cheating, nor to plagiarize the work of others. We pledge to share community resources in ways that are responsible and that comply with established policies of fairness. Cooperation and competition are means to high achievement and are encouraged. Indeed, cooperation is expected unless our directive is to individual performance. We will compete constructively and professionally for the purpose of stimulating high performance standards. Finally, we accept adherence to this set of expectations for academic conduct as a condition of membership in the UWF academic community.

Topics Covered: Assignments & Dates

Chapters of the Textbook will be covered in the order in which they occur, with about two-three class hours per chapter. You should also read *Appendix A* early on if you need a review of basic chemistry. There is not sufficient time to cover all the chapter of the textbook in one semester, given the technical nature of the material. We might not even be able to cover all the chapters listed below, so the schedule is tentative. You are encouraged to read the skipped chapters on your own, perhaps during a semester brake. *Cognitive Neuroscience (PSB 5035)* is a good follow up to this course: it greatly expands on the learning, memory, lateralization, and language material that there is not time to discuss in the present course. Thus the two courses complement each other.

Dates

Readings & Exams

May 10	Chapter 1. The Major Issues
May 12	Chapter 2. Nerve Cells and Nerve Impulses
May 17	Chapter 3. Communication at Synapses
May 19	Chapter 4. Anatomy of the Nervous System
May 24	Exam One
May 24	Chapter 5. Development and Plasticity of the Brain
May 26	Chapter 6. Vision
May 31	Chapter 7. The Other Sensory Systems and Attention
June 2	Chapter 8. Movement
June 7	Exam Two
June 7 & 9	Chapter 9. Wakefulness and Sleep
June 9	Chapter 10. Internal Regulation (<i>just Homeostasis and Hunger</i>)
June 14	Chapter 11. Reproductive Behaviors
June 16	Chapter 12. Emotional Behaviors
June 21	Chapter 15. Psychological Disorders
June 21	Exam Three (Final Exam)