Biopsychology (PSY 304)

University of Oregon
Summer 2008

MTWR 8:00 – 9:50; 246 Gerlinger Hall
June 23rd – July 20th, 2008
4 credits; CRN: 41703
Prerequisites: none

Instructors: Ben Lester and Alice Graham
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General Course Description: Three pounds of meat – that's enough for a small dinner party if you're buying a roast, or a Quarter-pounder for you and each of eleven of your closest friends. But did you know that three pounds of meat can also hold a lifetime of memories, emotions, thoughts and desires? In this course, we explore the brain, the three pounds of meat that make us who we are.

To understand the workings of the brain, we begin by exploring the cells, or neurons, that make up the brain– their structure and function, with a focus mostly on the ways in which these neurons "communicate" with one another using electrical currents and chemical signals. We also discuss how the chemical interaction between neurons is affected by drugs (those prescribed by a doctor, as well as those that aren't…), so that we can better understand their behavioral effects and associated benefits (and dangers). We also study the anatomy of the brain and the way in which different functions are segregated within the tissue. We then explore many of these functions in depth, including, for example:

- Sensation (vision, touch, hearing, taste and smell), which allows us to discover things about the world around us.
- Learning and memory, which provides a means of storing (and later recalling) that new-found information.
- Sleep, which might seem to be a time when the brain simply shuts down, but in reality is a time when the brain is highly active.
- Emotions, which modulate and color our behavior and interactions with others.

Finally, we discuss what happens when things go wrong in the brain – lesions due to trauma or stroke, developmental disorders like Down Syndrome and autism, degenerative disorders like Alzheimer's and Parkinson's Disease, schizophrenia, and depression. The course assumes no prior knowledge of biology or neuroscience – the only prerequisite is a desire to learn how a piece of meat can think, act and feel.

Required Text: ***Neuroscience: Exploring the Brain*** *Third Edition* by Mark F. Bear, Barry W. Connors, and Michael A. Paradiso (Please notify me immediately if you have difficulty obtaining the text from the bookstore. Available used on Amazon for around $44 for the third edition).

Course Website: The official course website is on Blackboard (http://blackboard.uoregon.edu). Please notify one of the instructors if you have difficulty logging into the site. This site will provide supplemental information for the course (course outline, grades, copies of overheads, etc.).

Optional Text/Weblinks: As *optional* reading on the subject, try *Biological Psychology* by James Kalat or *Biopsychology* by John P.J. Pinel (copies are on reserve in the Knight Library). You can also get more neuroscience-related information at the following web sites:
http://www.brainconnection.com
http://www.neuroguide.com
http://faculty.washington.edu/chudler/introb.html
http://www.hhmi.org/senses
http://ect.downstate.edu/courseware/neuro_atlas/ http://www.drugfree.org/Portal/DrugIssue/
http://www.newscientist.com/channel/being-human/brain
http://blogs.nature.com/nn/actionpotential/
http://www.mindhacks.com/
If you know of other web sites of interest, please pass them along to the instructor.

Course Format: The material in this course will be presented through a combination of assigned reading from the text (and accompanying CD-ROM), class lectures, and in-class videos, demonstrations and discussion. Lecture material and readings will have some overlap, but will not be replications of each other; some lecture material will not be covered in the readings and vice versa. You are expected to do the assigned reading *before* the corresponding lecture. Reading the material before the corresponding lectures will help your performance in two ways. First, discussions of the material during lecture will be more fruitful if you have at least a general understanding of the material beforehand, helping you to ultimately comprehend and retain the material. Second, questions drawn from the assigned readings will be included on the regularly scheduled quizzes, *even if they have not yet been discussed in lecture (see below)*.

Grading: Grading will be based on the combined scores from participation (7.5%), quizzes (10%), two midterm exams (25% for Midterm #1, 27.5% for Midterm #2), and the final exam (30%). Letter grades will be determined as follows: A (90 - 100% of total possible points), B (80 - 89%), C (70 - 79%), D (60 - 69%), F (0 -60%). However, the instructor reserves the right to relax (but not stiffen) this criterion, depending on the actual distribution of grades.

Quizzes (10%): Short quizzes will occasionally be given in the first 5 minutes of class. There will be four quizzes throughout the course. You will not know the days of the quizzes in advance. Questions will occasionally be drawn from readings that have been assigned but have not yet been discussed in lecture (even those due the day of the quiz); however, these questions

will be of a more general nature and should be easily answered if you have read the material. Of the four quizzes, the lowest score will be dropped, with the average score of the remaining three yielding 10% of the final grade. No make-up quizzes will be offered; if you miss a quiz, that grade will be the one that will be dropped.

Exams (Midterm #1: 25%, Midterm #2: 27.5%, & Final: 30%): The midterm and final exams will be composed of multiple choice, matching, fill-in-the-blank and short answer questions. The final exam will contain questions drawn from the entire course, but with a greater focus on material covered since Midterm #2. ***No make-up exams will be given without evidence of a valid excuse****, and the final cannot be taken earlier or later than the time listed in the University final exam schedule - if you know in advance that you cannot take all exams at the appointed times (see the course schedule below), do not take this course!* If unforeseen circumstances during the term prevent you from taking an exam, notify the instructors immediately.

Academic Learning Services: If you have difficulty with the course materials at any time, you are encouraged to contact the instructors or TA so that we can provide timely assistance. In addition, the resources of the Academic Learning Services (http://als.uoregon.edu/services/services.html) can be invaluable to students that require assistance in, for example, perfecting good study habits or honing their writing skills.

Students with Disabilities: If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with the instructor as soon as possible. Also, please request that the Counselor for Students with Disabilities (Hillary Gerdes, hgerdes@oregon.uoregon.edu, tel. 346-3211, TTY 346-1083) send a letter verifying your disability. For a list of resources provided by the Office of Disability Services, please see http://ds.uoregon.edu.

Students for whom English is a Second Language: If you are a non-native English speaker and think you may have trouble in this course due to language difficulties, please see the instructor as soon as possible to make any necessary special arrangements.

Academic Honesty: All work submitted in this course must be your own. For the consequences of academic dishonesty, refer to the Schedule of Classes published quarterly. Violations will be taken seriously and are noted on student disciplinary records. If you are in doubt regarding any aspect of these issues as they pertain to this course, please consult with the instructor before you complete any relevant requirements of the course. (For more information, see the UO web site regarding academic honesty at: http://studentlife.uoregon.edu/programs/student_judi_affairs/conduct-code.htm).

Course Outline: This is only a working draft of the course outline; it will be revised as the quarter progresses. Additional readings may be added. Dates on which particular topics are to be presented in lecture are subject to change, as are reading assignment due dates; however, we will not change the dates of quizzes or exams unless absolutely necessary. The official updated version of the outline will reside on the Blackboard web site. Updated print versions can also be obtained from the instructors or teaching assistant during normal office hours.

Week/ Day	Date	Topic	Reading Assignments	Exams/ Quizzes
Week 1				
1	6/23	Neuronal Structure and Function	Chap. 2 (pgs. 35-48), Chap. 3 (59-72), & Chap. 4	
2	6/24	Neurotransmission and Neurotransmitters	Chap. 5 (pgs. 111 – 127), & Chap. 6	
3	6/25	Neuroanatomy	Chapter 7	
4	6/26	Vision 1	Chapter 9	
Week 2				
5	6/30	Vision 2	Chapter 10	
6	7/01	**Midterm 1**		**Midterm 1**
7	7/02	Somatosensory	Chapter 12	
8	7/03	Motor	Chapter 14	
Week 3				
9	7/07	Sleep and Biorhythms	Chapter 19	
10	7/08	Learning and Memory Systems	Chapter 24	
11	7/09	Mechanisms of Learning and Memory	Chapter 25 (pgs.762-786)	
12	7/10	**Midterm 2**		**Midterm 2**
Week 4				
13	7/14	Limbic System-Emotion	Chapter 18	
14	7/15	Biological Bases of Psychiatric Disorders	Chapter 22	
15	7/16	Review for final		
16	7/17	**Final**		**Final**