

Biopsychology (PSY 304)

University of Oregon

Summer 2012

MTWR 2:00 – 4:20; 132 Lillis Hall
July 23rd – August 16th, 2012
4 credits; CRN: 41616
Prerequisites: none

Instructors: Ben Lester

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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: *Brain & Behavior* (3rd edition) by Bob Garrett (please notify me immediately if you have difficulty obtaining the text from the bookstore; I will also place a copy on reserve in the Knight Library). For optional readings in a textbook with more in-depth discussions of the topics that will be covered, I will also place a copy of Carlson's *Physiology of Behavior* on reserve in the Knight Library.

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. 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 five quizzes throughout the course. 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 five quizzes, the lowest score will be dropped, with the

average score of the remaining four 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.

Extra Credit: Students interested in an extra credit assignment can serve as subjects in the Psychology Human Subjects Pool. The Human Subjects Pool is designed to provide students the opportunity to see first hand how psychology experiments are performed; at the same time, you'll be providing data that will help a researcher learn how the brain works. If you decide to participate, you will earn 1 point of extra credit toward your *final grade in the course* for each hour you serve as a subject, up to a maximum of 3 points (credits beyond the maximum of 3 will be ignored). For example, 3 hours of credit would increase a final grade of 79 up to an 82, giving you a B- for the course instead of a C+.

To participate, follow the guidelines for the Human Subject Pool posted at <http://psychweb.uoregon.edu/undergrad/humansubjects.htm>. Since it is impossible to predict the number of experiments that will be available on any given week, I suggest that you *do not wait until the last week of the term before participating*. It is uncertain whether any experiments will be available during finals week. Note that it is your responsibility to faithfully follow the rules of Human Subject Pool, as described at <http://psychweb.uoregon.edu/undergrad/humansubjects.htm>. If you do not follow these rules, you will be penalized, in the form of a subtraction from your already-completed extra credit. **If you have any questions or comments about this extra credit assignment, do not hesitate to contact Ben Lester at blester@uoregon.edu.**

Students that prefer not to participate in the Psychology Human Subjects Pool can instead collect extra credit by writing a short paper on a topic within Biopsychology. If this is your preference, please see me to discuss the details of the requirement.

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 a working draft of the course outline; it may 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, I will not change the dates of quizzes or exams. The official updated version of the outline will reside on the Blackboard web site.

<u>Week/ Day</u>	<u>Date</u>	<u>Topic</u>	<u>Reading Assignments</u>	<u>Exams/ Quizzes</u>
Week 1				
1	7/23	What is Biopsychology? & Communication within the Nervous System	Chapter 2; Chapter 5 (pp. 125-137)	
2	7/24	The Organization and Functions of the Nervous System	Chapter 3	Quiz 1
3	7/25	The Methods and Ethics of Research	Chapter 4	
4	7/26	Vision & Visual Perception	Chapter 10	Quiz 2
Week 2				
5	7/30			
6	7/31	Midterm 1		Midterm 1
7	8/1	The Biology of Sex & Gender	Chapter 7	
8	8/2	Emotion & Health	Chapter 8	Quiz 3
Week 3				
9	8/6	Learning and memory	Chapter 12	Quiz 4
10	8/7	Sleep & Consciousness	Chapter 15	
11	8/8	Midterm 2		Midterm 2
12	8/9	Sensory and Motor systems	Chapter 11 (pp. 329-350)	
Week 4				
13	8/13	Neurological disorders	Chapter 11 (pp. 351-355)	Quiz 5
14	8/14	Psychological disorders	Chapter 14	
15	8/15	Course wrap-up & review		
16	8/16	Final exam - Comprehensive, but will focus on material covered since Midterm 2		Final exam