

Biopsychology (PSY 304)

University of Oregon

Summer 2011

MTWR 14:00-16:20; 142 Straub Hall

July 18 – August 10

4 credits; CRN: 42498

Prerequisites: none

Instructors: Jason Isbell (isbell@uoregon.edu)

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Jason's office: 37 Straub Hall (Basement)

Mondays 12:00-13:00, or by appointment

Devdeep's office: 229/233 Huestis Hall

Thursdays 11:00-12:00, or by appointment

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.

Recommended Text (assigned readings will be given from these):

Foundations of Physiological Psychology (6th, 7th or 8th edition)

Neil R. Carlson. New and used copies will be available at the university bookstore.

Neuroscience: Exploring the Brain (3rd edition)

[recommended only if you have a strong background in Biology]

Mark F. Bear, Barry W. Connors, Michael A. Paradiso

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, slides, etc.). It is advised that you check for announcements and course materials regularly by accessing this site. You will also need to check your emails at least once every day for instructions or announcements from the instructors.

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/n/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 recommended text books, 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 since 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. Given that this is an extremely condensed version of a very challenging course, this is very important. Please note, however, that all of the materials in the quizzes and the exams will be taken from the lecture slides and discussion. That makes it important that you do not miss any lecture.

Grading: Grading will be based on the combined scores from quizzes (10%), two midterm exams (25% for Midterm #1, 25% for Midterm #2), and the final exam (40%). Letter grades will be determined as follows: A (90 - 100% of total possible points), B (80 - 89%), C (70 - 79%), D (60 - 69%), and 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 be given in the first 5 minutes of lecture (every day of class except the days of the two midterms and the final exam). You will be quizzed on the previous day's lecture materials (slides and discussion). These questions will be of a general nature and can be easily answered if you pay attention to the lecture and review the slides after lecture. The quiz with the lowest score will be dropped. 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: 25%, & Final: 40%): 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 (i.e., cumulative), 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 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, we will

not change the dates of quizzes or exams. The official updated version of the outline will reside on the Blackboard web site.

Date	Topic	Instructor	Assigned reading	
			Carlson	Bear <i>et al.</i>
7/18/11	Neuronal structure & function	Aikath	Chapter 2	Chapters 2, 3, 4 & 5
7/19/11	Neuro-anatomy	Isbell	Chapter 3	Chapter 7
7/20/11	Vision 1	Isbell	Chapter 6	Chapters 9 and 10
7/21/11	Vision 2	Isbell		
7/25/11	Midterm Neurotransmission	Aikath	Chapter 4	Chapter 6
7/26/11	Neurotransmission Motor and somatosensory systems	Aikath	Chapter 7	Chapter 12, 13 & 14
7/27/11	Sleep 1	Isbell	Chapter 8	Chapter 19
7/28/11	Sleep 2	Isbell		
8/01/11	Midterm Emotions	Isbell	Chapter 10	Chapter 18
8/02/11	Learning and memory 1	Aikath	Chapter 12	Chapter 24
8/03/11	Learning and memory 2	Aikath	Chapter 12	Chapter 25
8/04/11	Demonstrations	Isbell/Aikath		
8/07/11	Neurological disorders	Aikath	Chapter 14	
8/08/11	Schizophrenia	Aikath	Chapter 15	Chapter 22
	Affective disorders Drug abuse		Chapter 16	
8/09/11	Review	Isbell/ Aikath		
8/10/11	Final exams	Isbell/ Aikath		