Biopsychology (PSY 304)

University of Oregon
Summer 2016
MTWR 10:00am – 12:20♦ 162 Lillis ♦ 4 credits
Prerequisites: none

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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.
- ♦ Reproductive behavior
- ♦ 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, to name a few.

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.

Course Goals: By the end of this course you should be able to:

- ♦ Identify neural structures and anatomical subdivisions of the nervous system, explain neural communication, and discuss how chemicals affect neural processing;
- ♦ Describe how our underlying physiology influences a wide range of human behaviors;
- ♦ Reflect on course topics and apply of the information you learned to your own lives;
- ♦ Understand (with appropriate skepticism) neuroscience-related reports in the popular press;

Required Text: ***The Mind's Machine, 2nd Ed.,*** by Watson & Breedlove, Sinaeur Associates, Inc. (http://www.sinauer.com/catalog/psychology/the-mind-s-machine.html). Please notify me immediately if you have difficulty obtaining the text from the bookstore. Supplemental material for the textbook (including practice quizzes) can be found at http://2e.mindsmachine.com (when registering for the site, you will need to enter the instructor's email address, darynb@uoregon.edu).

Course Website: The official course website is on Canvas (http://canvas.uoregon.edu). Please notify the instructor if you have difficulty logging into the site. This site will provide supplemental information for the course (syllabus, course outline, grades, images from the lecture, study guides, etc.).

Optional Websites: You can get more neuroscience-related information in the External Links module on the Canvas site, or at the following web sites:

http://brainconnection.positscience.com/
http://faculty.washington.edu/chudler/introb.html
http://ect.downstate.edu/courseware/neuro_atlas/
http://www.newscientist.com/topic/brain
http://www.erowid.org/psychoactives/
http://www.neuroguide.com
http://www.mindhacks.com/
http://www.drugfree.org/drug-guide

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, class lectures, and in-class/in-lab 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 of ten quizzes (15% total), current event summary (13% total), and four exams (72% total) for a total of 100 points. 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%); +'s and –'s will also be assigned (e.g., 90 – 93 = A–; 93 – 97 = A; 97 – 100 = A+). However, the instructor reserves the right to relax (but not stiffen) these criteria, depending on the actual distribution of grades.

Current Event Summary – *Due by end of day 9/8/16* (13%):

Science literacy is an important part of being a consumer of the media. There is a lot of stuff out there that is biased, over-simplified, or just made-up. BUT there are also some really great popular science sources out there. Find a "good" or "bad" article in the media related to a topic in biopsychology (check the news, facebook, youtube, etc). Write a summary of the article and be sure to include:

- Who wrote it? Are they biased? Are they reliable? How do you know? (*Hint: having a PhD does not automatically mean that you will be unbiased)*
- What did they find? Do the results seem valid intuitively? Do the authors explain how they got their results (methods)? Do they report any statistics?
- What do you know about the topic from class and readings? Is that knowledge consistent or inconsistent with the article? *(HINT: Some parts may be consistent while others are inconsistent)*
- Are there citations to peer reviewed scientific journals? What about to books? Interviews?
- What is your conclusion about the article?

Quizzes (15%):

Short quizzes will be required for each day of class. These quizzes will range from 3-5 questions. Questions will be drawn from assigned readings for that day. These questions will be of a more general nature and should be easily answered if you have done a first pass of the reading. With the exception of Quiz 1, all quizzes will be in-class. There will be 12 quizzes throughout the course. Of the 12 quizzes, the lowest 2 scores will be dropped. The average score of the remaining 10 will yield 15% of the final grade***. No make-up quizzes will be offered.*** If you miss a quiz then that grade will be the one that will be dropped.

Exams (Exam #1: 18%, Exam #2: 18%, Exam #3: 18%, & Exam #4: 18%):

An exam will fall at the beginning of each week (i.e., TWR: lecture, following M: exam; Note*: Special time for the final). The exams will be composed of multiple choice, matching, fill-in-the-blank and short answer questions. The last exam will contain questions drawn from the entire course, but with a greater focus on material covered since Exam #3. The Exams will be made up of material from the readings and lectures and will include some of the questions from the quizzes. ***No make-up exams will be given without evidence of a valid excuse****, and the last exam 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), then do not take this course!* If unforeseen circumstances during the term prevent you from taking an exam, notify the instructor 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 not be counted). 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://psychology.uoregon.edu/research/human-subjects-pool/. 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://psychology.uoregon.edu/research/human-subjects-pool/. 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 your instructor.**

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 contact your instructor to discuss the details of the requirement.

Classroom climate: It is my goal that you feel respected – both by me and your peers – in this class. Please let me know if I or other students make you feel uncomfortable, so that corrections can be made. If you feel that you or someone else has been the victim of bias in this class, you may consider contacting the Bias Response Team (bias.uoregon.edu/index.html).

Classroom Etiquette: Students in large classes often believe they are invisible, that they will not be noticed, and that one's individual behavior does not matter. *This is not true!* You can

make a difference by listening attentively, asking questions, and contributing to discussions. Just as actively engaged students have a positive influence on the classroom environment, activities like talking to your neighbor, texting, coming late, leaving early, personal grooming, reading the newspaper, loud yawns, sleeping, surfing the web, or cell phone use can be extremely disruptive. PLEASE make sure that you and your fellow students get the most from this course by abstaining from such activities. Cell phone use (for texting, calls, or web surfing) is prohibited (also, please silence your ringer before each class). Laptops can be used only for taking notes (no web surfing, checking Facebook, etc.), and they are highly discouraged even for that purpose.

Students Needing Accommodations for Accessibility: If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me as soon as possible. Also, please request that a counselor at the Accessible Education Center (uoaec@uoregon.edu, tel. 541-346-1155) send a letter verifying your disability and needed accommodations. For a list of resources provided by the Accessible Education Center, please see aec.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 me as soon as possible to make any necessary special arrangements. If you think you may need to use a dictionary for in-class exams, you must ask to have your dictionary checked by me prior to the exam. Electronic dictionaries are not permitted.

Academic Honesty: All work submitted in this course must be your own. Violations will be taken seriously, and will be noted on student disciplinary records. If you are caught cheating, you will receive a 0 on the assignment; you may also receive a failing grade for the course. 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 student conduct, uodos.uoregon.edu/StudentConductandCommunityStandards/AcademicMisconduct.aspx.

Course Outline: This is only a working draft of the course outline; it will be revised as the term 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 Canvas web site. Updated print versions can also be obtained from the instructor during normal office hours.

Week	Date	Topic	Reading	Exams/Quizzes
1	Aug. 15	Syllabus + Intro to Brain & Behavior	Chapter 1	Quiz 1 (take home)
	Aug. 16	Cells & Structures I	Chapter 2	Quiz 2
	Aug. 17	Cells & Structures II	Chapter 2	Quiz 3
	Aug. 18	Neurophysiology	Chapter 3	Quiz 4
2	Aug. 22	***Exam 1 - Chapters 1, 2 and 3***		***Exam 1***
	Aug. 23	The Chemistry of Behavior	Chapter 4	Quiz 5
	Aug. 24	Vision I	Chapter 7	Quiz 6
	Aug. 25	Vision II	Chapter 7	Quiz 7
3	Aug. 29	***Exam 2 - Chapters 4 and 7***		***Exam 2***
	Aug. 30	Hormones & Sex I	Chapter 8	Quiz 8
	Aug. 31	Emotions, Aggression & Stress	Chapter 11	Quiz 9
	Sept. 1	Psychopathology	Chapter 12	Quiz 10
4	Sept. 5	*- Labor Day: no class -*		
	Sept. 6	***Exam 3 - Chapters 8 and 11***		***Exam 3***
	Sept. 7	Memory & Learning	Chapter 13	Quiz 11
	Sept. 8	***Exam 4 - Cumulative***		***Exam 4 & Quiz 12***

¡Important! <u>Final note</u>: Much of the exam material will primarily be based on lecture material. This includes both what is in the slides and what the instructors say when fleshing out the slides. Therefore, it is strongly suggested that you take good notes and attend class. If you anticipate not being able to attend class regularly then you may want to consider dropping the course. This is a 10-week course condensed into 4 weeks and contains somewhat challenging material. We will move quickly and cover a lot of ground. As the instructor, I will do all I can to facilitate your learning of the material, but please take note that to do well in this course it will require a significant amount of effort and diligence on your part. Please do not hesitate to ask questions during lecture, schedule office visits, and/or email me with any questions or needs for clarification of the material. This is not an easy course but it is definitely possible to do well if you put forth the effort and take advantage of all resources.