PSYCH 3: Introduction to How the Brain Works (1 unit)

Summer 2021, TTh 1:30-3:00pm on Zoom
* Note: all times here and on bCourses are in PDT (UTC -7)

Instructor

Robin Ball, rwball@berkeley.edu
I am a lecturer in the Molecular and Cell Biology department and teach courses in neuroscience and human physiology. This is the sixth time I have taught Psych 3 and I love introducing students to the wonders of the brain.
Office hours will be by appointment, just email me. I will also stay after lecture to answer questions.

Course Description

This course is for students who are fascinated and curious about the human mind and brain, and for students who seek a rigorous yet accessible introduction to brain function. The course will give an overview of our current understanding of how the brain works and how it is altered by experience. Specifically, this class will provide an introduction to the structure and function of sensory systems and the motor systems, as well as discussions of several interesting disorders and phenomena such as face blindness, synesthesia, and phantom limbs. In addition, we will discuss the capacity of the young and adult brain for plasticity and learning and present classical experiments to illustrate our understanding of these topics. We will learn about how language is processed in the brain, using insight from stroke patients and imaging studies. Finally, we will discuss the reward pathway and some neurological disorders, such as depression and Alzheimer's Disease.

Course Objectives

- To provide students with an overview of the functioning and structure of the mammalian nervous system.
- To introduce and compare the organization and function of sensory systems and how this relates to perception.
- To provide information on the functioning of the motor system in the context of plasticity and advances in prosthetics.
- To present an introduction to the neural mechanisms of learning and memory.
- To provide an environment that promotes discussion and questioning from and among the students.

Course format

Lectures will happen via Zoom T/Th 1:30-3:00pm. The Zoom meeting will start at 1:30pm, but we won't start lecture until 1:40, so you will get a chance to get settled. Most lectures will likely end before 3:00pm. Lecture slides will be posted on bCourses before class, so you can take notes on them during class. We will use polling to do practice questions and occasionally you will be put into breakout rooms to discuss a question with other students. Feel free to use the chat function to ask questions during lecture.

The link to the Zoom meeting is available on bCourses. All the lectures will also be recorded and available in the Media Gallery in bCourses. Attendance in lecture is not required, but it is highly encouraged!

bCourses: You should be enrolled in the bCourses PSYCH 3 website, which can be found at https://bcourses.berkeley.edu/

Please check the website frequently for assignments and announcements. Lecture slides will be posted in the Files section before class. All the homework will be through bCourses and you can find them in the Assignments section.

Please also use Piazza on bCourses to ask questions about the class or material.

Reading Material
Required: Oliver Sacks, *The Man Who Mistook His Wife For a Hat and Other Clinical Tales*, 1985, Touchstone: Simon & Schuster. ISBN: 978-1491514078.
You can find this book used in bookstores or buy it cheap online. You can probably also find pdfs of individual chapters online. Check the schedule to see which chapters you need to read.

Optional: Bryan Kolb and Ian Q. Whishaw, *An Introduction to Brain and Behavior 5th edition*, 2016, Worth Publishers. ISBN: 978-1464106019

Reading: There will be reading assignments in the Oliver Sacks book that you should complete before coming to class. Reading assignments are listed on the class schedule. The textbook reading assignments are recommended, but not required.

Class assignments

Homework: There will be four homework assignments posted on bCourses about the material covered during the previous lectures. Homework will be open for a few days and you can take them twice. Your top score will count towards your final grade. **Homework will be due at 1:30pm on the days specified on the schedule.** Late homework will be accepted up to a week late, but you will lose 0.2 points per late day up to 1 point off.

Reading and response assignments: You will have four reading assignments in the Oliver Sacks book that cover similar topics to what we will cover in class. Read the assigned chapters and write one paragraph that discusses the reading on bCourses (more than 6 sentences). In your response to the reading, you should discuss what you learned, what you found surprising or interesting and any questions you still have on the material. You also need to respond to one other person's comments. If you are the first person to complete the assignment, then go back later after other people have posted.

Your responses will be graded based on effort. You will receive 2 points for your initial post (assuming it is complete) and 1 point for responding to someone else's post. The assignments are listed on the class schedule. The reading responses must be submitted on time. Contact Robin if you need an extension.

Online exams: There are two exams and they are not cumulative, though some earlier material will still be important to know in order to understand the new material. The exams will be multiple choice, true/false, fill in the blank and select all questions. You will have 60 minutes for each exam.

The exams will be available to take through Gradescope, which you can get to through our bCourses page. You will answer the questions directly in Gradescope, typing in your answers. The exams will be available for 24 hours on the day indicated in the schedule. Once you start the exam you will have 60 minutes to complete it.

The exams will be open-note, so you may use your notes, the slides, or bCourses. You will not have time to look up every single answer, though, so you do still need to study for the exam. You are not allowed to work together during the exam or to share information about the exam with another student in the class. We trust you to complete your own work.

Exam 1 covers material from lecture 1-5. Exam 2 will focus on material from lecture 6-10, but you will still need to know earlier material (as it relates to the new material).

Grades:

Online homework	20 %
Reading responses	10 %
Exam 1	35 %
Exam 2	35 %

Accommodations
Students who need academic accommodations, should request them from the Disabled Students' Program, 260 César Chávez Center, 642-0518 (voice or TTY), https://dsp.berkeley.edu. DSP is the campus office responsible for verifying disability-related need for academic accommodations, assessing that need, and for planning accommodations in cooperation with students and instructors as needed and consistent with course requirements.

We are committed to fully supporting our students with disabilities, including meeting accommodations listed in a DSP letter. If you would like to discuss your accommodations with an instructor, please reach out to us.

Academic integrity
The student community at UC Berkeley has adopted the following Honor Code: "As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others." We expect that you will adhere to this code.

Cheating: A good lifetime strategy is always to act in such a way that no one would ever imagine that you would even consider cheating. Anyone caught cheating on an exam in this course will receive a failing grade in the course and will also be reported to the University Center for Student Conduct. Consulting with another student during an exam is considered cheating.

Plagiarism: To copy text or ideas from another source without appropriate reference is plagiarism and will result in a failing grade for your assignment and usually further disciplinary action. For additional information on plagiarism and how to avoid it, see, for example:
http://www.lib.berkeley.edu/instruct/guides/citations.html - Plagiarism
http://gsi.berkeley.edu/teachingguide/misconduct/prevent-plag.html

Academic Integrity and Ethics: Cheating on exams and plagiarism are two common examples of dishonest, unethical behavior. Honesty and integrity are of great importance in all facets of life. They help to build a sense of self-confidence, and are key to building trust within relationships, whether personal or professional. There is no tolerance for dishonesty in the academic world, for it undermines what we are dedicated to doing – furthering knowledge for the benefit of humanity.

Your experience as a student at UC Berkeley is hopefully fueled by passion for learning and replete with fulfilling activities. And we also appreciate that being a student may be stressful. There may be times when there is temptation to engage in some kind of cheating in order to improve a grade or otherwise advance your career. This could be as blatant as having someone else sit for you in an exam, or submitting a written assignment that has been copied from another source. And it could be as subtle as glancing at a fellow student's exam when you are unsure of an answer to a question and are looking for some confirmation. One might do any of these things and potentially not get caught. However, if you cheat, no matter how much you may have learned in this class, you have failed to learn perhaps the most important lesson of all.

Diversity statement
The University of California considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. Our community is enriched and enhanced by diversity along a number of dimensions, including race, ethnicity, national origins, gender, sexuality, class and religion. We welcome all our students in our class and hope that you always feel included. If there are aspects of the instruction within this course that result in barriers to your inclusion, please let us know. Your suggestions are encouraged and appreciated.

Mental Health and Wellness
All students – regardless of background or identity – may experience a range of issues that can become barriers to learning. These issues include, but are not limited to, strained relationships, anxiety, depression, alcohol and other drug problems, difficulties with concentration, sleep, and eating, and/or lack of motivation. Such mental health concerns can diminish both academic performance and the capacity to participate in daily activities.

In the event that you need mental health support, or are concerned about a friend, UC Berkeley offers many services, such as free short-term counseling at University Health Services. A list of resources can be found here: https://uhs.berkeley.edu/sites/default/files/mhresources.pdf
A campus website having links to many resources is: https://recalibrate.berkeley.edu/
Remember that seeking help is a good and courageous thing to do – both for yourself and for those who care about you.

If you have questions, comments, concerns: Please do not hesitate to contact the instructor! I am always available by email or on Piazza. Use Piazza to ask questions about the lecture material. Feel free to answer other students' questions.

Class Schedule (subject to change)

Sacks = reading and response to Oliver Sacks book (see below), due on bCourses at 1:30pm
Homework = on bCourses and due at 1:30pm on the day indicated

Date	Day	Lec	Topic	Assignments due	Textbook (in Kolb)
July 6	T	1	Introduction to nervous system		Ch 2, 3
July 8	Th	2	Neuronal signaling		Ch 4, 5
July 13	T	3	Somatosensory system	Sacks #1 (Ch. 3,4,6) Homework 1	Ch 11
July 15	Th	4	Visual system	Sacks #2 (Ch. 1)	Ch 9
July 20	T	5	Motor system	Homework 2	Ch 11
July 22	Th		**Exam 1 (Lec 1-5)**		
July 27	T	6	Sleep		Ch 13
July 29	Th	7	Learning and memory	Sacks #3 (Ch. 2)	Ch 14
Aug 3	T	8	Language	Sacks #4 (Ch. 9) Homework 3	Ch 10
Aug 5	Th	9	Emotion and motivation		Ch 12
Aug 10	T	10	Neurological disorders	Homework 4	Ch 16
Aug 12	Th		**Exam 2 (Lec 6-10)**		

Reading and response assignments for Oliver Sacks book.

1) Read chapter 3, 4 and 6 about the somatosensory system
Response due on bCourses July 13 at 1:30pm
Since there are multiple chapters, try to briefly summarize them all and then focus on one particular chapter you found the most interesting

2) Read chapter 1 about visual perception
Response due on bCourses July 15 at 1:30pm

3) Read chapter 2 about loss of memory
Response due on bCourses July 29 at 1:30pm

4) Read chapter 9 about language impairment (aphasia)
Response due on bCourses Aug 3 at 1:30pm