



PSYCH 110

Introduction to Biological Psychology

Overview

This class will present an introduction to the brain mechanisms underlying mental processes and intelligent behavior. We will describe the anatomy of the brain, the properties of brain cells that enable them to perform computations, and the neural circuit mechanisms underlying sensory perception, motor control, memory and thinking. We will try to emphasize basic principles over rote learning. The class arc will go from basic introductory material all the way to latest research in the field of behavioral neuroscience.

Textbook

The optional text for the class is: "Behavioral Neuroscience", S. Marc Breedlove and Neil V. Watson, Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts 2017. (The previous seven editions were titled "Biological Psychology"). This will give beneficial background material and further reading - but earlier (and hence cheaper) editions would also be useful.

Instructors

David Foster, professor in the Psychology Department and the Helen Wills Neuroscience Institute, is an expert in the neurophysiology of the hippocampus. His work focuses on "replay" phenomena, in which hippocampal neurons re-activate sequences of activity patterns from previous behavior, a phenomenon thought to underlie memory processing.

The Graduate Student Instructors are: Adam Krause (Prof. Matthew Walker laboratory) and Neta Gotlieb (Prof. Lance Kriegsfeld laboratory).

The lectures will be every Monday and Wednesday (see Syllabus) at 2pm in the Genetic & Plant Biology room 100.

Contact Information

Instructor TBD email TBA
Instructor TBD email TBA
Instructor TBD email TBA

Office Hours: TBD
Office Hours: TBD
Office Hours: TBD

Lecture/Exam Calendar

Part I: Biological Foundations

Date TBD	1. Introduction
Date TBD	2. The structure of the nervous system
Date TBD	3. Functional properties of neurons
	<i>Labor Day - no class</i>
Date TBD	4. Communication between neurons
Date TBD	5. Cellular mechanisms of memory I
Date TBD	6. Cellular mechanisms of memory II

Part II: Sensorimotor Processing

Date TBD	7. Introduction to sensory systems
Date TBD	8. Vision: the eye
Date TBD	9. Vision: the brain
Date TBD	MIDTERM #1: lectures 1-6
Date TBD	10. Hearing and the vestibular system
Date TBD	11. Somatosensation
Date TBD	12. Motor control
Date TBD	13. Movement disorders

Part III: Behavioral Control

Date TBD	14. Reward systems
Date TBD	15. Computation with neural networks
Date TBD	MIDTERM #2: lectures 7-13
Date TBD	16. Short-term memory
Date TBD	17. Long-term memory
Date TBD	18. Emotion
Date TBD	19. Drugs and addiction
Date TBD	20. Attention and consciousness
Date TBD	21. Stress - lecture by Neta Gottlieb
Date TBD	22. Sleep - lecture by Adam Krause
Date TBD	23. Executive control
	<i>Thanksgiving - no class</i>
Date TBD	24. Beyond individual neurons: sequence replay Q & A session

Discussion Sections

Weekly, 6 sections with max 25 students each:

Instructor TBD	TBD
Instructor TBD	TBD

Important Information

Announcements

All important class announcements will be made through bcourses.

We will also make use of the forums feature of bcourses. If you have a question about the class material, rather than emailing, please post it to the forums, where one of the instructors will answer it. If you don't understand something, it is likely that many students in the class don't understand it, and so by posting your question to the forums, the entire class benefits. We also encourage you to answer other student's questions if you know the answer.

Assessments

There will be two midterms and one final examination. Each midterm will constitute 30% of your grade. The final will be cumulative and will contribute 35% of the overall grade. 5% of the overall grade will be determined from RPP (see below).

Attendance at discussions sections as well as lectures is compulsory. We will record attendance and use it to make decisions when grades lie on a grade boundary.

Regrade Policy

We do our best to avoid mistakes in grading. However, please note that we are as likely to make a mistake and assign credit where it wasn't deserved as we are to fail to assign credit where it was deserved. You are welcome to request a regrade, but please note that the entire paper will be regraded, with the result that your grade can either go up or down. Obviously, if you feel like we've made a big mistake, it is still in your best interest to have the entire paper regraded. However, if it is something small, you may be better off not requesting a regrade. The decision is yours.

Please understand that this policy is to try to ensure equitable treatment across the entire class of students. Different students have different personalities and some are less likely to complain about grades than others. This policy ensures that those differences do not end up affecting your grade.

Research Participant Program (RPP)

All students taking Psychology classes must serve as research participants. The maximum number of credits that can count towards your final grade is 3 (see table below). Please make sure that you assign your credits to this class before the end of semester (end of instruction). Even if this is your only psychology class, you must assign the credits. **Failure to assign the credits will result in lower grades due to missed credit.**

In order to learn how to create an RPP account and start participating in experiments, please go to the following link:

<http://psychology.berkeley.edu/students/undergraduate-program/research-participation-program>

and click on "RPP Information for Students".

You can also direct questions to rpp@berkeley.edu

The contribution of RPP credits to the overall grade is:

1 credit:	2%
2 credits:	4%
3 credits:	5%

Rules of Conduct

We expect all students to adhere to the UC Berkeley Honor Code: honesty, integrity and respect for others. Cheating and plagiarism are never tolerated.

The University of California strives to prevent and respond to harassment and discrimination. Engaging in such behavior may result in removal from class or the University. If you are the subject of harassment or discrimination there are resources available to support you. Please contact the Confidential Care Advocate (<http://sa.berkeley.edu/dean/confidential-care-advocate>) for non-judgmental, caring assistance with options, rights and guidance through any process you may choose. Survivors of sexual violence may also want to view the following website:

<http://survivorsupport.berkeley.edu>

For more information about how the University responds to harassment and discrimination, please visit the Office for the Prevention of Harassment and Discrimination website:

<https://ophd.berkeley.edu>