RUTGERS
UNIVERSITY | CAMDEN

NEUROBIOLOGY OF BEHAVIOR (50:120:394)

SENSORY BIOLOGY & BEHAVIOR (56:120:596)

COURSE DETAILS

Professors: Drs. William Saidel (saidel@camden.rutgers.edu) and Nathan Fried (Nathan.fried@rutgers.edu)

Class Hours: Monday & Wednesdays: 9:35 – 10:55 AM
Class Location: BSB-133

Fried Office Hours: Monday & Wednesday: 11:00-1:00 PM
Fried Office Location: Science Building 233 (Best to give me a head's up you are coming in).

Saidel Office Hours: By appointment

Course Description:

You have already taken Neuroscience I and are familiar with the pieces of the brain. In this class, we'll start diving into deeper questions about brain function. What can the brain tell us about behavior? What does knowing one piece of a system tell you about the brain? Nothing really. We will be discussing during the semester a number of different issues around the idea of brain: how is it built, how did it get that way for Homo sapiens; what does it do; why do we need one; how do we abuse it and many more issues.

We'll dive into the different disciplines of neuroscience, ranging from neurophilosophy, neuroanatomy, molecular neuroscience, electrophysiology, psychology, etc. The goal of the course is to piece apart these fields and truly dive into what the data REALLY mean.

This course will function as a seminar and thus, readings are ESSENTIAL for class discussion. Dive deep into the material and let's have fun.

Note from the professors:

Our goal is to promote intellectual curiosity about the brain. We are not interested in memorizing lists here. We want to promote in-depth and open discussion. When you have a question, ask it! Don't be shy. Be engaged. Embrace your ignorance. It is the only way this class can be fulfilling.

Tentative schedule for each class: This is only an approximation. Each week may be slightly different.

Mondays
9:35-10:55 – Professor Lecture

Wednesdays
9:35-10:35 – Student Journal Club
10:35-10:55 – Alternate Professor's Response

Each Monday, one of the two professors will give a lecture on a specific topic in neuroscience. This will provide the foundational information you need to understand the week's journal club. On Wednesday, the alternate professor for the week will prepare a response to Monday's lecture material to provide a different perspective on it. Following the response, the student for the week will present a paper that covers that week's topic. The purpose of this is to bring active engagement and discussion into the classroom.

RUTGERS
UNIVERSITY | CAMDEN

Calculation of Final Grades:

Percentages

A = 90-100%
B+ = 85-89%
B = 80-84%
C+ = 75-79%
C = 70-74%
D = 60-69%
F = Below 60%

Breakdown of points
Journal Club Presentation: 20%
Journal Club Worksheets (12 at 1 pt each): 10%
Journal Club Moderator: 15%
Topic Suggestions Assignment: 5%
Final Paper (different style for grad and undergrad): 50%

COURSE ASSIGNMENTS, ACTIVITIES, & DETAILS

Journal Club Presentation: Each student will prepare a 60-minute PowerPoint presentation on an assigned research article. These papers will highlight an active area of research on topics discussed in class. In preparation, students are encouraged to discuss the papers, as well as any issues related to their presentation, with the instructor in advance. Your job as the presenter for the week is to essentially teach your peers about the research article. You are the one who is the expert on the paper and thus, your goal is to guide us through it so that we all understand it. Some of these articles are research-based while others might be more theoretical. Your goal is to digest it and present it to us.

Structure of Journal Club Presentation Guide:
Introduction/Background (~15 min): It is VITAL to frame your presentation of the article. Use their own introduction as your guide. Put their findings into context so that once you delve into the data, the audience will have all the information they need to actually understand the data.

Describe the following in your intro:
1) The field they are exploring.
2) What is not known about the field.
3) The question they are trying to answer with their research, review, or theoretical paper.
4) How they propose to answer or approach the question.

Where does it fit? (~5 min): Now, discuss how this paper fits into the context of Monday's lecture material.

Results (~15 min): You should go figure by figure and describe the logic for doing that experiment, the way the experiment works (i.e., the methods used and whether it's molecular or behavioral), and what the conclusion is from each figure. This will let you move figure to figure. If there are no figures because it's a review or theoretical paper, you should present their logical flow. Consider the data as a story. Tell us the story.

Conclusions (~5 min): Now, take that data or theoretical framework and put it into context with what you presented during the intro. Tell us how it solved the question they proposed in the intro. Put it into the bigger picture.

BIG picture? (~5 min): Fit this article into the greater context of neuroscience. Why is this paper foundational? What's so important here?

Additional Paper (~5 min): Find any other paper on pubmed that's related to the assigned reading and put it into the context of the assigned reading. How does it give you perspective on the topic?

Questions/Discussion (~10 min): Be ready to answer any questions from the audience. It is OK to say, "I do not know." Being a scientist means being comfortable with the unknown. Also, you should prepare your own intellectual questions to ask the audience. You should be prepared to lead a discussion, not just field questions.

Journal Club Worksheet (Due the night before the presentation): If you are not presenting a journal club for the week and are not the journal club moderator, you should fill out a journal club worksheet. It is due by 11:59pm on SAKAI Tuesday, the night before class. In order for this class to actually work, it is ***IMPERATIVE*** that you have read the journal club assigned for the week. Part of this worksheet includes preparing two questions/points to ask the presenter. At the time of the presentation, students are encouraged to ask these questions and participate in the discussion. Consider this a safe place for practicing having the courage to ask questions!

Journal Club Moderator (Due the night before the presentation): Each week, a student will be assigned to be the Journal Club Moderator. This student will be required to come up with 10 questions to ask the Journal Club Presenter. To figure out good questions to ask, you have to do a deep reading of the paper and submit your questions the day before the presentation. During the presentation, you will be required to ask the questions you came up with.

Topic Suggestions Assignment (Due Wednesday, Oct 2): Each student should submit on Sakai three or more topics in neuroscience they would like covered in the class. During the second half of the class, remaining topics will be chosen and added to the syllabus.

Final Intellectual Paper (Due Wednesday, Dec 11): More details to be presented in class. Students will choose a topic by mid-semester and write a paper on it. The difference between intelligent and intellectual is the difference between knowing much about a subject (intelligent) and much about a subject in context (intellectual). Undergrads and graduate students will have different requirements for this assignment.

Attendance: This is a small class. Attendance is ESSENTIAL for it to work. Think of it like you'd think of a boardgame. If some players are missing each week, the game doesn't work!

COURSE MATERIALS

This course does not have a textbook. It will be paper-based. However, below are some helpful resources.

Harvard's Fundamentals of Neuroscience online videos
URL: https://www.mcb80x.org
Description: This is the free online version of Harvard's introductory Neuroscience course. It includes video, interactive, and other components to help you understand the core concepts of this course.

CrashCourse's Youtube videos
URL: https://www.youtube.com/playlist?list=PLOA0aRJ90NxuIgOC9YGRUT4Y-CsP12bsS or google "Neuroscience Crash Course" to find the page.
Description: This is an open source collection of youtube videos that will provide core information on the material in this course.

MetaNeuron
URL: http://www.metaneuron.org/
Description: This is an online neuron simulator. You should download this program. We will use it in class.

University of Texas's online neuroscience textbook
URL: https://nba.uth.tmc.edu/neuroscience/toc.htm
Description: This is a complete open source neuroscience textbook. It is more detail than you need, but it will be a valuable resource for studying. Notice all the interactive flash animations to help understand the material.

SFN Brain Facts
This is an additional book by the Society for Neuroscience with basic information. You can find it on SAKAI.

Optional Textbook

If you wish to purchase a textbook to follow along, we suggest "Neuroscience: Exploring the Brain, 4th edition" by Bear, Connors, and Paradiso. It is the easiest to understand.

CLASSROOM POLICIES

Attendance/Tardiness: I will not take attendance. I will ONLY accept valid excuses for absences. You can find the university's policy at: http://sasundergrad.rutgers.edu/forms/absence. As for being late…just don't be late. It's rude! Think of that last time your friend showed up 10 minutes late to dinner. When a student has a university-approved reason for missing a class, the student should fill out the self-reporting absence here: https://sims.rutgers.edu/ssra/.

Food Policy: Feel free to bring food or drink to the classroom, but please be respectful of your fellow students.

Students with Disabilities Statement: Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: https://ods.rutgers.edu/students/documentation-guidelines. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form at https://webapps.rutgers.edu/student-ods/forms/registration.

University Academic Integrity Statement: The college regards academic dishonesty on the part of the students as unacceptable behavior that could result in dismissal. Every incident of academic dishonesty is required to be reported to the provost. These incidents will be kept in a confidential file by the provost so that a record of the infractions is available when reports are made.

Definitions:

Academic Dishonesty – includes, but is not limited to, plagiarism, cribbing, or cheating on exams.

Plagiarism – unacknowledged borrowing or duplication of an author's words or ideas whether intentional or not. Common forms:

a. Text without quotation marks or proper documentation,
b. With documentation but without quotation marks or correct quotation format,
c. In paraphrase without proper documentation.

Dr. Fried's Email policy: I get a lot of emails every day. To use my time most efficiently, I try to take care of all email matters in the morning. If you email me at night, you can expect a response within 24-48 hours. However, if I don't respond after 48 hours, feel free to "reply" to your own email to "ping me" again. Sometimes the flood of emails might bury yours. This is common practice in academia. Always feel free to remind someone of your email. Often, if they don't respond, it's just because they missed it; not because they are ignoring you.