

BIBB 109/PSYC109/BIOL109
Introduction to Brain and Behavior
Spring 2022

Lecture: Tuesday/Thursday Noon-1:30PM, Tredori Family Auditorium, Levin Building
Recitation Sections: 104 Leidy

Course Faculty

Instructor: Michael J Kane, Ph.D.

Office: 468 Levin

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Office Hours (in 104 Leidy): Thursday 10:00am-11:30am (1/20 will be held virtually)

Head TA: Caela Long

Email: caela.long@pennmedicine.upenn.edu

Office Hours (virtual): Every other Friday (beginning 1/31) 3-4pm

<u>Recitation</u>	<u>TA</u>	<u>E-mail</u>
M 8:30am-10:00am	Joseph Gallegos	josephtg@pennmedicine.upenn.edu
M 10:15am-11:45am	Marissa Maroni	mmaroni@pennmedicine.upenn.edu
M 12pm-1:30pm	Evan Rosario	rosarior@sas.upenn.edu
M 1:45pm-3:15pm	Julie Merchant	jpmerch@pennmedicine.upenn.edu
M 3:30pm-5:00pm	Valerie Sydnor	valerie.sydnor@pennmedicine.upenn.edu
M 5:15pm-6:45pm	Ethan Blackwood	ethanbb@pennmedicine.upenn.edu
T 8:30am-10:00am	Yuzhang Chen	yuzhangc@pennmedicine.upenn.edu
T 10:30am-12pm	Kara McGaughey	kara.mcgaughey@pennmedicine.upenn.edu

Note: The first week of recitations is 1/24

Course Description

This course will provide a comprehensive introduction to the nervous system, focusing on the structure and function of the human brain. We will begin with the basic biology physiology of the cells of the nervous system (neurons and glia) and build to understand the basics of how nerve cells communicate via the process of neurotransmission. We next move into an investigation of neuroanatomy and neurodevelopment. With the above knowledge in hand, we move into the sensory systems and investigate olfaction (smell), hearing, vision, and somatosensation by focusing on how physical stimuli (such as sound and light waves) are converted into neural signals, where these signals travel in the brain, and how they are processed. We then move into an investigation of motor systems.

Finally, we discuss higher level cognitive and emotional processes along with psychopathology. This course is designed to be interactive. Lectures will be supplemented by live questions, recitation discussions will be directed by your quiz performance and questions, and lab activities are meant to give you a more hands-on experience with the material.

Course Goals

Our goals are to support you in developing the skills:

- to understand and explain how common principals govern the organization and function of the systems and processes within the nervous system
- to build and modify models of scientific concepts and processes
- to think through the consequences of disrupting or modifying a biological process

Textbook (Required):

Bear, Connors, Paradiso (2016) *Neuroscience: Exploring the Brain* (4thed)

Recitations:

Recitation sections will **meet every week** in 104 Leidy unless otherwise noted on the syllabus. Attendance at each Recitation session is **mandatory**. During the Recitation, your TA will provide a brief review of the material covered during the previous week's lectures, go over problem sets and quiz questions, and address any questions you may have. ******Please note that you are only to attend Recitation on the day/time for which you are registered. There are no exceptions to this rule.**

You will also complete some laboratory-based exercises during the semester:

Lab Exercise 1: Computer simulation of resting membrane potential

Lab Exercise 2 and 3: Sheep brain dissection

Lab Exercise 4: Memory Lab

The neuroanatomy practicum will be also completed during one of the Recitation sessions. (see Tentative Schedule for Date).

Canvas

Lecture slides, lecture recordings, weekly quizzes, weekly problem sets, and all other course materials, and announcements will be posted on this site.

Grading:

Final semester grades will be based on the following:

Your **highest two** Midterm scores will contribute to your Midterm score for the semester (e.g., you can drop the lowest Midterm score!)

	50%
Cumulative Final Exam	25%
Weekly Problem Sets	5%
Recitation Attendance	5%
Weekly Quizzes	5%
Neuroanatomy Practicum	5%
Attendance Quizzes	5%

Exams:

A large part of your grade will be a product of your performance on four exams (three midterms and one cumulative final exam—you will be able to drop your lowest midterm score). All exams will consist of multiple choice/fill-in-the-blank/matching and free-response questions. Students **must use pen** to be considered for a re-grade request.

There will be **no** makeup mid-term exams unless there is an extenuating circumstance causing you to miss at least two exams or if there is conflict with a religious holiday or university sponsored event. In the case of religious holiday or university sponsored event conflict, please look at the dates for the exams **now**. If any exam conflicts with a religious holiday that you observe or an official university event, please let me know by e-mail by the **end of the second week of the course**.

Weekly Quizzes:

There is a total of **10** take-at-home, online quizzes during the semester. Each quiz will consist of 5 multiple choice questions (based on the material covered in the lectures during the week), and you will have 5 minutes to complete it. You may use your notes, textbook, etc. during the quiz. The quizzes will be posted on Canvas on Thursday at midnight and are to be completed by the upcoming **Sunday at 11:59 pm**. You must complete the quiz **on time** to receive credit. Only your **top 9** quiz scores will contribute to your quiz grade for the semester. **There are no make-up or late quizzes.**

Weekly Problem Sets:

Each week a Problem Set consisting of several questions from the material covered in the weekly lectures will be posted to Canvas. Completion of these Problem Sets is **required**. Your grade on these will be determined by effort, not correctness. The Problem Sets will be posted on Canvas on Thursday and you must submit your completed Problem Set by the upcoming **Sunday at 11:59 pm**. You should attempt to answer each question using your notes, textbook, etc... These questions are representative of the type you will see on each exam. TAs will go over these Problem Sets during the weekly Recitation sessions. **Late submissions will not be accepted for credit.**

Attendance Quizzes

We will be administering “Attendance Quizzes” during lectures. The quizzes will consist of 2-3 questions that cover material presented in lecture and will test your understanding of the material. The quizzes will not be graded for correctness, but you must complete the quiz to get credit for the day. You are allowed to miss quizzes from up to **three class periods** during the semester. After three absences, points will be deducted from your Attendance Grade for each missed class. **There are no make-up or late Attendance Quizzes.**

Re-grading (Testivus):

In the spirit of the most famous made-up holiday (Festivus), you will have the opportunity to air your grievances with any exam question that you felt was unfair. As part of Testivus, you must submit your grievance to me *in writing* to have your work re-

evaluated, **no more than one week after the work is returned in class**. No re-grade requests will be considered beyond this date. Your request must explain the specific error or fallacy that you think was made. If you submit a request, your work will be re-graded in its entirety, and the final grade could be higher or lower than your original grade. **We will only regrade if an assignment was completed in pen.** Please only submit a Testivus request if you genuinely believe that a question was unfair or an error has been made.

Lectures:

This course will be taught in a lecture-based format. If you have any questions or if there is something that you do not understand in class, speak up! It is likely that many of your classmates do not understand it either.

Attendance to the lectures is not mandatory; however, there will be Attendance Quizzes during lectures and you will not get credit for these if you are not present in the classroom. If you want to do well in the class, it is best to attend all lectures. Lecture slides will be posted in CANVAS before the lecture. You are forewarned that slides are **only part** of the lecture and may not convey all information that was presented orally. Neither the posted slides nor the textbook provide an adequate substitute for attending class. Lectures will be recorded in Zoom and posted to the Canvas Site; however, nobody will be permitted to watch the lecture live.

Readings:

You should read the assigned portions of the textbook *prior to class*. At certain points in the course, the lectures will coincide closely to the textbook, while at other points the lecture may diverge from the text. In the case of divergence, you should consider the lecture as primary material and the textbook as supporting material.

Review Sessions:

The TAs will run review sessions before each exam. Be sure to email them specific questions and/or topics to cover during the reviews.

Office Hours/Email Policy:

You are encouraged to attend office hours if you have any questions about the content or structure of the course. Please only e-mail the instructor or TA if you have a question that can be answered in a few sentences or less. If you have a question that requires a longer response, please come to my office hours. TAs do not have office hours.

Academic Integrity:

Please note that Penn has strict rules on academic integrity (see: <https://catalog.upenn.edu/pennbook/code-of-academic-integrity/>)

Any violation of the rules will be reported to the Office of Student Conduct and will likely result in automatic failure of the course.

Course Absence Report:

The Course Absence Report (CAR) system has been designed to provide a consistent way for students to notify course instructors of short-term absences for one or more courses. It also provides a method for advising offices to track absences and coordinate support for students who miss classes. The submission of a CAR does not excuse you from your course obligations; students are still responsible for following up with each instructor directly and adhering to course policies and procedures as outlined in the course syllabus. All students enrolled in a class can submit a CAR during the current term using Penn InTouch.

All notifications of class absences must be sent to the instructor through the CAR *only*. If you will be absent for more than five days as a result of a University-approved excuse, please contact a CaseNet advisor with the College Office, who will notify your instructors directly.

Classroom Etiquette:

During lecture, electronic devices should be used **only** for course relevant purposes, not for sending instant messages, surfing the web, monitoring status updates on Facebook/Instagram, or any other purpose.

TENTATIVE SCHEDULE

Date	Topic	Chapter	Assignments
1/13	Course Introduction (Live Zoom)		
1/18	Neurons and Glia (Pre-recorded)	2	
1/20	Resting Membrane Potential (Pre-recorded)	3	Quiz and Problem Set 1 Due 1/23
1/25	Action Potential	4	Lab Exercise 1
1/27	Action Potential/Synaptic Transmission	4/5	Quiz and Problem Set 2 Due 1/30
2/1	Synaptic Transmission/NT Systems	5/6	
2/3	NT Systems	6	Quiz and Problem Set 3 Due 2/6
2/8	Organization of Nervous System	7	
2/10	Organization of Nervous System	7	Quiz and Problem Set 4 Due 2/13
2/15	Catch-up/TBD		Brain Dissection Part 1
2/17	EXAM 1		
2/22	Chemical Sense of Olfaction/The Eye	8	Brain Dissection Part 2
2/24	The Eye	9	Quiz and Problem Set 5 Due 2/27
2/28 and 3/1: Lab Practicum			
3/1	Central Visual System	10	
3/3	Central Visual System/Auditory System	11	Quiz and Problem Set 6 Due 3/13
3/8	No Class—Spring Break		
3/10	No Class—Spring Break		
3/15	Auditory System/Somatic Sensory System	11	
3/17	Somatic Sensory System	12	Quiz and Problem Set 7 Due 3/20
3/22	Spinal Control of Movement	13	
3/24	EXAM II		
3/29	Brain Control of Movement	14	
3/31	Nervous System in Time and Space	15	Quiz and Problem Set 8 Due 4/3
4/5	Motivation	16	
4/7	Mental Illness	22	Quiz and Problem Set 9 Due 4/10
4/12	Memory Systems	24	
4/14	<i>Guest Lecturer: Computational Neuroscience Group</i>		
4/19	Language	20	Memory Lab
4/21	Brain Mechanisms of Emotion	18	Quiz and Problem Set 10 Due 4/24
4/26	EXAM 3		
TBD	CUMULATIVE FINAL EXAM		

Important Dates:

2/21 Drop Period Ends

3/28 Last day to withdrawal from a course