

NRSC 1110 / BIOL 1110 / PSYC1210
Introduction to Brain and Behavior
Spring 2025
Tuesday /Thursday 5:15-6:44pm Leidy 109
Laboratory/Recitation: Leidy 104

Instructor: Judith McLean, Ph.D.

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Office: 467 Levin Building

Office Hours: Thursday 3:30-4:30 or by appointment

Lab Coordinator: Dr. Michael Kaplan mkap@sas.upenn.edu

Teaching Assistants:

Recitation/Lab

Susan Shin [susanns@sas.upenn.edu](mailto:susan@sas.upenn.edu)

NRSC 1110-602 Monday 5:15-6:45

Matilde Männil matildem@sas.upenn.edu

NRSC 1110-603 Wednesday 5:15-6:45

NRSC 1110 Problem Solving Workshop TA:

Angela Bongiovanni

Angela.Bongiovanni@Pennmedicine.upenn.edu

Group problem solving sessions

Synopsis:

Introduction to the structure and function of the vertebrate nervous system. We begin with the cellular basis of neuronal activities, then discuss the physiological bases of sensory systems, motor control, motivated behaviors, and higher mental processes. This course is intended for students interested in the neurobiology of behavior, ranging from animal behaviors to clinical disorders.

Textbook (Required):

Bear, Connors, Paradiso. Neuroscience: Exploring the Brain (4th ed). Philadelphia, PA.: Wolters Kluwer, 2016

Canvas:

Lecture slides, problem sets, quizzes and announcements will be posted on this site. Please be sure to set your **notifications** so that you receive **Announcements** in a timely manner, as this will be the primary mode of communication in this course. *All material on the exams, quizzes, and problem sets will be taken from material presented during the lecture; any material in the textbook that is not covered in the lecture will not appear in any of these assessments.*

Readings:

You should read the assigned chapters of the textbook *prior to coming to the lecture*. At certain points during the course, the lectures will coincide closely with the textbook, while at other points the lecture may diverge slightly from the textbook. In the case of divergence, you should consider the lecture as the primary material and that from which all exam questions will be derived; *material contained within textbook chapters that is not covered in lecture will not be included on quizzes or exams.*

Recitations/Labs:

Goals: Answer questions, clarify material. Ask questions during recitation or email TA topics before coming to recitation.

All recitations/labs will meet in room 104 Leidy Labs. Five of these weekly recitations will be a lab. You may not attend a recitation that you are not signed up for without the permission of the Head TA or the Lab Coordinator.

Lab 1: computer simulation

Lab 2: Sheep brain dissection.

Lab 3: Sensory Perception/Motor reflexes

Lab 4: Memory Lab

Recitation/Lab absences: Recitations/labs can only be missed for last minute excused absences, such as illness or severe inclement weather. If you have a conflict with the recitation/lab due to curricular or extracurricular activities, personal obligations, or religious holidays please let the TA and Lab Coordinator know as soon as possible to make arrangements to attend a different section or make up the recitation/lab with your TA

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 by correctness. 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. The TAs will go over these Problem Sets during the weekly recitation. **Late submissions will not be accepted for credit.**

Quizzes

For the weekly quizzes you may use your notes, textbook, etc. to complete the quiz. You must complete the quiz **on-time** to receive credit. You will have two attempts at the quiz. The highest grade will be recorded.

There are no make-up or late quizzes.

Exams:

There are three midterm exams. We will drop the lowest midterm grade during the semester. There will be one cumulative final exam. Each exam is made up of multiple choice and short answer questions. You will **not** be permitted to use notes, textbook, etc. to complete the exams.

Grading:

The final grade will be based on:

Highest two scores on 3 midterm exams. We will drop the lowest midterm grade. Two exams each worth 25%, 1 cumulative final exam 30%

Lab Quiz, Attendance in Recitation, Weekly Quizzes and Problem Sets, each worth 5% (20% total). Lowest quiz grade will be dropped

Cumulative Final Exam	30%
2 Midterm Exams	50%
Lab Quiz	5%
Recitation Attendance	5%
Quizzes	5%
Problem Sets	5%

Important: The grades on canvas do not reflect these weights, so do not consider your canvas grade as your actual grade

The University recognizes religious holidays. If you need to miss an exam for a legitimate reason (e.g., religious holiday) please let the Course Director know within the first week of class or as soon as you know about a

conflict. If there are students who have a problem with the schedule date for an exam, they must schedule a make-up exam *before the scheduled examination date*. No makeup exams will be given unless the student presents a *bona fide* excuse. Regrading – it is within your right to request that an exam question be regraded. Requests for regrades should be given in writing to the Head TA within one week after an exam is returned, explaining why you believe it should be regraded. Any such request will result in the regrading of the entire exam, using scanned copies we will have on file.

Grades will be distributed as follows:

Percent (min)	Grade
0	F
60	D-
63.3	D
66.7	D+
70	C-
73.3	C
76.7	C+
80	B-
83.3	B
86.7	B+
90	A-
93.3	A
96.7	A+

Additional Video Links

For some topics covered during the semester, there will be supplementary videos that will assist you in the learning process. These links are located within the module of the topic they cover.

Academic Integrity:

I expect you to act with academic integrity in accordance with the University of Pennsylvania's Code of Academic Integrity

<https://provost.upenn.edu/policies/pennbook/2013/02/13/code-of-academic-integrity>

Any act of academic dishonesty will be reported to the Office of Student Conduct

Email Etiquette:

Your TAs and I will do our best to respond to emails within 24 hours, although over the weekends and holidays it may be longer. Course content questions are best asked in recitation, at office hours, or in tutoring, not through email.

How to do well in this course:

Do the reading (skim for the big ideas and read for important details after class)

Participate in class and recitations
 Use weekly assignments to identify what you don't understand
 Test yourself. There are many online resources for self-assessment from the book
 Come to office hours
 Go to the BIBB 109 Workshop weekly sessions
 Seek academic support at the Weingarten Resource Center
 Study with a partner
 Keep up! Don't fall behind, there is a lot of information.

Week		Lecture	Chapters	Recitation/Assignments
1	1/16	Introduction		No Recitations
2	1/21	Neurons and Glia	2	No Recitations
	1/23	Membrane Potential	3	Quiz and Problem Set Ch. 2 due 1/26
3	1/28	Membrane Potential/Action Potential	4	Quiz and Problem Set Ch.3,4 due 2/2
	1/30	Action Potential		LAB Exercise 1
4	2/4	Synaptic Transmission I	5	Quiz and Prob Set Ch. 5,6 due 2/9
	2/6	Synaptic TransmissionII	6	
5	2/11	Organization of the Nervous System	7	Quiz and Problem Set Ch. 7 due 2/16
	2/13	EXAM 1(Chapters 2-6)		
6	2/18	Chemical Senses	8	Quiz & Prob Set Ch. 8,9 due 2/23
	2/20	Vision I	9	LAB Exercise 2
		DROP PERIOD ENDS 2/24		Quiz and Prob Set Ch 10 due 3/2
7	2/25	Vision II	10	LAB Practical Exam
	2/27	Vision III/Auditory I	11	
8	3/4	Auditory II	11	
	3/6	Vestibular	11	
9	3/8	SPRING BREAK – NO CLASSES		
10	3/18	Somatosensory	12	Quiz and Prob Set Ch 11,12 due 3/23
	3/20	Spinal Cord	13	Lab Exercise 3
	3/25	Brain control of Movement	14	
	3/27	Hypothalamus/Motivation	15,16	

LAST DAY TO WITHDRAW FROM A COURSE 3/31

Quiz and Prob Set Ch 13,14 due 3/30

11	4/1 4/3	Synaptic Plasticity EXAM 2 (Chapters 7-14)	23 p. 805-820
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Quiz and Prob Set Ch 15,16 due 4/6

12	4/8 4/10	Learning and Memory Emotion	24, 25 18
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Quiz, Prob Set Ch 23,24,25 due 4/13
Lab Exercise 4

13	4/15 4/17	Brain Rhythms and Sleep Language	19 20
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Quiz and Prob Set 18,19,20 due 4/20

14	4/22 4/24	Mental Illness Conclusions and Review	22
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15	4/29	EXAM 3 (Chapters 15-25)	
	TBD	FINAL EXAM (cumulative)	

LAB POLICIES AND PROCEDURES

General lab safety guidelines

1. No food, drink or chewing material (including water bottles) is permitted in the lab. Keep pens, pencils, fingers and other objects (especially pipettes!) out of your mouth. For pipetting, use the pipet pumps provided. Keep water bottles off the bench!
2. Proper lab attire must be worn at all times. Failure to do so will result in not being permitted to enter the lab. Proper lab attire is:
 - a Closed-toed shoes
 - b Long pants only (shorts are not allowed)
 - c Shirts must cover shoulders and back and must have sleeves
3. Familiarize yourself with the location of the fire extinguishers, safety showers and eyewash stations.
4. Proper personal protective equipment (PPE) must be worn during all labs. Failure to do so will result in not being permitted to enter the lab, and loss of credit for the day. Proper PPE is:
 - a. Disposable nitrile gloves
 - b. Lab goggles (when working with liquids or preserved specimens)
 - c. Disposable lab coat (when working with stains, caustic chemicals, or preserved specimens)
5. Personal electronics, such as laptops, iPads, and phones, may be used in the lab. They are only to be used on a clean area of the benchtop. If an area is not clean, then all experimental matter must be removed from that area, and the area should be disinfected. Then personal electronics may go on the benchtop. Personal electronics may not be handled with a gloved hand. After lab, personal electronic devices must be disinfected by wiping them down with a damp paper towel before they are put away.
6. In the case of an emergency: [Students must follow the emergency response procedures stated on the Emergency Response instructions poster, which is posted in the lab. Notify your TA or lab instructor immediately in the case of any injury, exposure or emergency.](#)

In the case of chemical contact, cut, or puncture, flush the affected area for 15 minutes with soap and water. If splashed in eyes, use emergency eyewash. Hold both eyes open and flush for 15 minutes.

7. Before leaving the lab, wash your hands well with soap and warm water and wipe dry with a paper towel.

Waste Disposal

Discard disposable used materials as follows:

1. **Syringes and razor blades:** Syringes and razor blades can be disposed of in special disposal containers marked “Sharps” or “Syringes”. Under NO circumstances should razor blades be disposed of in the regular trash, or in the large red bags for preserved tissue!
2. **Sheep brains and other preserved animal material:** All preserved animal material should be disposed of in the containers marked “Preserved Animal Material” in the front of the lab room.

3. **Used plastic test tubes:** Used plastic test tubes should be disposed of in the normal trash can.
4. **The following items** should be placed in the small buckets on the benches (TRASH(TIPS)). At the end of the class these buckets should be emptied into the red plastic biohazard bin at the front of the room.
 - a. **Used glass test tubes**
 - b. **Used pipet tips**
 - c. **Disposable pipettes – glass or plastic**