

Class time & location: Latter 102 MWF 12:15 – 1:10 pm	Instructor title and name: Dr. Yoojin Choi
	Phone: (619) 849-2654
Final Exam: Wed May 7 10:30am – 12:30pm	Email: ychoi@pointloma.edu
Office location and hours: Rohr Science 116 (Enter through Biology Office Suite) MWF after chapel until 11:30am <ul style="list-style-type: none"> You're welcome to come in and chat if my door is open at other times. Or if you prefer a designated meeting time, email me to set up an in-person meeting or a Zoom meeting. 	

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Course Description

Bio 4070 Neuroscience is a study of the nervous system at the molecular, cellular, intercellular, and gross anatomy levels. Topics include neurons and glia, physiology of neurons, neuroanatomy, nervous system development, neural networks, and learning and memory. Diseases and conditions corresponding to the topics covered will also be discussed. Other possible topics include intelligence, language, and ethics. There is no separate laboratory section associated with Bio 4070, but some laboratory work (dissections) is included during class meeting times.

Prerequisite: Biology 1040, Biology 2012, Biology 4023 or Psychology 3001

The university catalog specifically states that the prerequisite for this course is Bio 1040 Human Anatomy and Physiology 2, Bio 2012 Organismal Biology, Bio 4023 Advanced Human Physiology or Psy 3001 Physiological and Neuropsychology.

Student Learning Outcomes

- Students will demonstrate their understanding of electrical and chemical communication between neurons, and supporting role of neuroglia for nervous system function.
- Students will identify the major anatomical structures of the human central nervous system and their functions.
- Students will demonstrate their understanding of nervous system development, neuronal networks in sensory and motor systems, and molecular mechanisms of learning and memory.
- Students will explain the mechanism of neurons contributing to a complex phenomenon such as motivation, sexuality, emotion, sleep, language, or consciousness.

Required Text

Reading the textbook should be the biggest component of your out-of-class study time. Read the assigned pages in the textbook before and after class. We are using an open-source textbook that is freely downloadable. Download the PDF instead of relying on the online version.

Hedges, V. (2022) Introduction to Neuroscience. Michigan State University.
<https://open.umn.edu/opentextbooks/textbooks/1303>

You will need to access Canvas for handouts and course activities: Canvas.pointloma.edu.

Spiritual Care

PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. “Office Hours” are drop-in time for students to have conversations about all topics, not just academics.

If you have questions, a desire to meet with the chaplain or have prayer requests you can also contact the [Office of Spiritual Life and Formation](#).

Dr. Choi’s Teaching and Learning Philosophy

You are the main player in your learning, not a spectator of my teaching. The responsibility to learn is yours. For learning to happen, you must take an active role in the process. However, you are not alone in the process: I am here to work with you. Extending the sports analogy, I’m your coach and your classmates are teammates, and we learn together in community.

You are expected to come to class prepared, which requires you to read, study, and learn *before* class. Of course, you’re expected to keep reading, studying, and practicing after class, too. There will be a lot of interactive learning in class. I expect you to pull your weight and collaborate actively. Let us all help in each other’s learning.

Learning Opportunities and Expectations

Reading Before Class:

Reading the assigned chapters and/or pages in the textbook is essential for success in this course. Class topics are noted in the class schedule, and you should read – or at least skim – the appropriate portions of the textbook before class to give you context and boost your confidence for classroom participation. This will ensure you are giving yourself the best chance for success in this course.

- *Helpful Tip: To ensure you’re thinking about what you’re reading, pause and process after each paragraph or section – pick out key words, summarize in one sentence, write a question, etc.*

Taking Notes in Class:

Take notes by hand while in class. Writing by hand is a more effective way of learning than is typing. With typing, each letter is pretty much the same thing for the brain. Writing, however, uses different muscle groups with each word and encourages the brain to integrate material during the writing process. [Typing may be easy and fast, but by making the brain passive, it discourages learning.](#) (“[Why writing by hand beats typing for thinking and learning](#)”)

I will try my best to video-capture every class and upload the recordings on Canvas, as a studying tool for everyone and in case someone has to miss class. See “[Recording Notification](#)” below.

- *Helpful Tip: Use different colored pens to take notes. E.g. pre-class textbook skimming notes in pencil vs in-class notes in black pen; main theme in red vs other notes in black; your questions in blue vs my comments in black.*

Studying:

It is highly recommended that you study at least 2-3 hours for every unit or a college credit hour. Since Bio 4070 is a three-unit course, you should be studying 6-9 hours every single week—and not just the week prior to an exam. This studying should also be spread out during each week, not simply occurring before quizzes.

Note that “studying” is a separate section from “reading.” Studying needs to be **active**. If you need to re-read the textbook or watch the class recording, of course you should. However, *simply* re-reading the textbook or watching recordings is passive. Make sure that you not only **memorize** but that you also **understand** the material.

To understand the material, model in-class activities of quizzing each other (active recall!) and teaching each other; write your understanding of a topic and swap it with a classmate to see how it can be phrased differently; make a practice quiz and swap it with a classmate for authentic practice; etc. Note that the best active studying involves working together in community.

Assessment and Grading

Each student is responsible for tracking their grade throughout the semester through Canvas Grades. The final semester grade will be calculated as a percentage of 800 points total.

- 1) Participation and Collaboration = 80pts
- 2) Learning Reflection Assignments (20 points x 6 assignments) = 120pts
- 3) Small Assignments = 50pts
- 4) End of Semester Reflection Assignment = 50pts
- 5) Student-led Class Project = 100pts
- 6) Quizzes (30 points x 5 quizzes) = 150pts
- 7) Midterm exam = 100pts
- 8) Final exam = 150pts

1) **Participation and Collaboration** (60pts, plus 20pts from Student-led Class days): We are expected to respect each other, have an openness of mind toward new points of view, and have curiosity for learning new material. You are expected to participate actively in all class activities in collaboration with classmates from diverse backgrounds.

Your active participation in class is critical to our collective understanding and growth. Make sure you prepare for every class in order to participate well. Simply attending class does not earn you 5 out of 5 points for a given recorded class. See Appendix: Participation and Collaboration Rubric to understand how you will be graded. Note that simply attending class does not merit 5 out of 5pts.

Participation and Collaboration will be recorded every class on a sheet of printed roster, then eight random records will be entered into Canvas Grades at the end of Quad 1 (5 pts x 8 = 40 pts) and four at the end of Quad 2 from normal class days led by me (5 x 4 = 20pts). If you are absent for a class meeting that happens to be selected, a zero will be entered. If the absence is excused due to an official University obligation (requiring prior notification from the administration and the student), you will receive a 3 out of 5. You can make up the “lost” points by participating on Canvas. See below about “Muddiest Point”.

In this small upper-division course, the expectation is that everyone will participate in a lively manner and that everyone will invite each other to collaborate freely. However, I also respect individual differences in comfort levels about speaking up in person, so if you choose to not speak up in front of the whole class in person, you can participate online instead. The “Muddiest Point” Canvas Discussion Board is for everyone to post their content questions as you’re studying outside of class – instead of emailing me your question, you would post it on Muddiest Point and anyone (not just the instructor) can answer. At the end of each quad, your online participation will make up for any points you’re missing from the in-person. If you earned anything less than 5 out of 5 from in-class Participation and Collaboration for any reason (maybe your team pulled you out of class (3pts), maybe you were absent due to a cold (0pt), etc), you can earn back those points by participating online. (However, the number of absences may not exceed 20% of class meetings as specified in [“PLNU ATTENDANCE AND PARTICIPATION POLICY”](#) below.)

Besides making up for in-person points, Muddiest Point has its own innate value. It allows me to answer questions for everyone’s benefit. Having to think about what to ask has learning benefits. Explaining your answers to each other’s questions in writing is a great practice for quizzes and exams. I hope everyone utilizes Muddiest Point.

Toward the end of the semester, students will lead class on topics of their choice. Classmates in audience are required to do engage with the presenter actively. Your Participation and Collaboration on those days will be evaluated separately for 20 points.

I hope you can tell from the large amount of information in this section that I truly care about active participation from individual students and about collaboration between students. You are an active agent in your own learning, and we are learning together in community.

2) **Learning Reflection Assignments** (120pts): Being aware of what you are learning and how you're learning it is an important metacognitive skill. To develop this ability, students will write a Learning Reflection every other week. A Learning Reflection is like keeping a log, summarizing what you learned, what you're struggling with, and how you plan to get those questions answered. Often, students feel like quizzes and exams do not address what they consider important and/or what they learned and studied. The Learning Reflection can be a place to demonstrate your learning process apart from the quizzes and exams.

In addition, I would like you to reflect on how the specific prerequisite course you took prepared you for that unit in Neuroscience. This exercise will help you connect the new knowledge to prior knowledge, and it will help me understand the path PLNU students take toward Neuroscience.

Each Learning Reflection entry will be graded for minimum length, thoughtfulness given to class content, and insight into the prerequisite(s). Feedback on writing mechanics may be given for your learning but will not affect your grade, unless the writing mechanics are so poor that they interfere with my comprehension of your writing. You may use AI tools but must describe what tool you used when and how. Remember that these Reflections are meant to be personal, so generative AI would not be of much help.

There will be a quiz or exam approximately every two weeks, and the Learning Reflections are synchronized to that assessment cycle. There will be six total Learning Reflection Assignments, each with one of the five quizzes or the midterm (20pts x 6 = 120pts). Late assignments are accepted, but Canvas is set up to automatically take off 10% every 24 hours starting from the second it is late. See Canvas for more information.

3) **Small Assignments** (50pts): Approximately one small assignment per week (each one approximately 5 pts) will be given as an encouragement to participate, to read before class, for formative assessment, and to provide constructive feedback. Most will be due in Quad 1. More information on Canvas.

4) **End of Semester Reflection** (50pts): Making connections between seemingly disparate topics of study and observing one's growth as a student are important metacognitive skills. To encourage you to engage in their practice, I would like you to write an End of Semester Reflection, connecting all your coursework and activities from this semester/academic year and reflecting on your personal growth. See Canvas for more information. I will make it due on Monday of Finals Week to help you stay on track but will accept late work. The last day that any late assignment is accepted is Friday of Finals Week.

5) **Student-led Class Project** (100pts): Students work in a team of 3 or 4, and the team teaches the rest of the class a book chapter in Weeks 12 and 13. Students will choose their chapter before Spring Break, have their progress checked by me, and teach the class.

- The team will choose one chapter between Ch 48 – 65. Each team must check in during Office Hours or by appointment (Zoom or in person) twice before the presentation with specific tasks for each check-in (TBA on Canvas). A successful check-in is worth 5 points, and each team member receives a personal grade. The sequence and dates of presentations will be determined once all teams choose a chapter and announced before Spring Break.
- In a given student-led class, student presenters will be assessed on ability to communicate their mastery of the chapter content and engage their audience (80pts; individual components and team components), and student

audience members will be assessed on their engagement with the presenters (See “Participation and Collaboration” above). See Canvas for more information and rubrics. After all student-led classes, all students will be assessed on their content knowledge on student-presented topics on the quiz and the final exam. All students are responsible for learning the material presented by their peers.

- Student presenters will write quiz/exam questions and answer keys for their topic, which will be evaluated for correctness, appropriateness for the course, and formatting (10pts). I will choose, and modify as needed, the questions to include on the quiz and the final exam. See Canvas for more information.

- 6) **Quizzes** (150pts): A total of five 30pt quizzes will be given. There will be a quiz approximately every two weeks according to the [Tentative Class Schedule](#). Each quiz will take half a class period, with the remaining half of normal class activities. Quizzes must be taken in person in class or at the EAC and cannot be rescheduled, except due to an official University obligation (requiring prior notification from the administration and the student) with advance notice.
- 7) **Midterm Exam** (100pts): The midterm exam is cumulative. The exam must be taken in person in class or at the EAC and cannot be rescheduled, except due to an official University obligation (requiring prior notification from the administration and the student) with advance notice. A late penalty of 10% (minus 10pts from the score) per calendar day will be applied in case the exam is missed and a makeup exam is given.
- 8) **Final Exam** (150pts): The Final Exam is cumulative. According to the University’s Final Exam Schedule, ours is scheduled for Friday, May 5 at 10:30am. The exam must be taken in person in class or at the EAC and cannot be rescheduled except in extenuating circumstances. A late penalty of 10% (minus 15pts from the score) per calendar day will be applied in case the exam is missed and a makeup exam is given.

Your letter grade will be determined from your cumulative percent score as follows:

A: 93.0—100%	B-: 80.0—82.99	D+: 67.0—69.99
A-: 90.0—92.99	C+: 77.0—79.99	D: 63.0—66.99
B+: 87.0—89.99	C: 73.0—76.99	D-: 60.0—62.99
B: 83.0—86.99	C-: 70.0—72.99	F: ≤ 59.99

- To model professionalism, I strive for honest and timely feedback, and transparency and fairness in grading. Grades are posted on Canvas Grades. Please ask about grades as soon as you have a question. Do not wait until the end of the semester. The course follows a straightforward point system, so there is no need for “negotiating” over letter grades at the end of the semester.
- Records are kept for one year from the end of the semester.

Laboratory Safety and Clean-Up:

Although Bio 4070 Neuroscience does not have a formal and separate lab component, we will spend three class periods for the Neuroanatomy unit doing hands-on activities in laboratories. Dissection tools and safety glasses will be provided, but you are welcome to bring your own particularly if you are concerned about quality of the tools and/or hygiene of shared safety glasses.

- No food or water in the laboratory.
- Keep all backpacks and other personal belongings completely under the lab bench or outside the lab, such that no one could possibly trip over these items. (The Sator cubbies are for A&P cat storage.)

- Enclosed shoes are mandatory. Open-toed or open-back shoes (sandals, clogs, Crocs, slippers etc) are not permitted.
- Clothing must cover and protect the body from shoulders to ankles. Wear a lab coat or old clothing that you do not mind getting dirty.
- Bring a writing utensil that you don't mind getting dirty from the preservatives.
- Tie long hair and remove or tuck in any loose-hanging accessories (e.g. lanyard, necklace, hoodie strings, bracelets).
- At the end of each class period make sure that your table and the equipment have been cleaned. Return the equipment to its appropriate place. Common-sense and good-neighbor behavior, please.

Technology Policy

Electronic devices interfere with your education and distract your neighbors. Numerous studies (some highlighted here) have confirmed that classroom laptop use can be detrimental to learning. Students do not learn as well when they type their notes as opposed to hand-writing. Easy access to the internet is distracting. For these reasons, I discourage the use of laptops, phones, or other internet-accessing electronic devices in the classroom. An exception to the "no device" rule is if you use the inking function on your tablet device (turn off alerts and put it on airplane mode).

1. Laptops and other electronic devices enable more than just note-taking, introducing numerous distractions (web-surfing, homework for other classes, social media, etc.) for you and your neighbors. You may think that you can multitask, but studies show you can't.
http://www.slate.com/articles/health_and_science/science/2013/05/multitasking_while_studying_divided_attention_and_technological_gadgets.html
2. Using your laptop in class is bad for those around you. Your classmates' grades can also suffer due to the distracting pull of the laptop.
<https://www.sciencedirect.com/science/article/pii/S0360131512002254>
3. Writing is a more effective way of learning material than is typing. With typing, each letter is pretty much the same thing for the brain. Writing, however, uses different muscle groups with each word and encourages the brain to think during the writing process. Typing may be easy and fast, but by making the brain passive, it discourages learning.
 - <https://www.npr.org/2016/04/17/474525392/attention-students-put-your-laptops-away>
 - <https://www.npr.org/sections/health-shots/2024/05/11/1250529661/handwriting-cursive-typing-schools-learning-brain>
4. Using electronic devices in class also impairs long-term retention, with one study suggesting that cellphone use in class can lower one's grade by half a letter grade.
<https://www.insidehighered.com/news/2018/07/27/class-cellphone-and-laptop-use-lowers-exam-scores-new-study-shows>

Artificial intelligence (AI) policy

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro, GrammarlyGo, Perplexity, etc.) in this course. In fact, we will engage it actively in class. Any work that utilizes AI-based tools must be clearly identified as such, including the specific tool(s) used. Please use the following sources to guide your citations when using AI. Both APA (American Psychological Association) and AMA (American Medical Association) styles of citation are acceptable in this course. Be consistent in your citation style within a given assignment.

- APA Style: [How to Cite ChatGPT](#)
- AMA Style: [AMA Software and AI](#)

Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

Content Warning

I acknowledge that each of you comes to PLNU with your own unique life experiences. This contributes to the way you perceive various types of information. The content in this course, including that which may be intellectually or emotionally challenging, has been intentionally curated to achieve the learning goals for this course. The decision to include such material is not taken lightly. These topics include several diseases which may have affected you, family members or friends. We will also examine human brains from cadavers in lab. If you encounter a topic that is challenging for you, it can manifest in feelings of discomfort and being upset. In response, I encourage you to come talk to me about it. I will support you throughout your learning in this course.

PLNU FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: [Final Exam Schedule](#). If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an "F" grade.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

PLNU POLICY ON SEXUAL MISCONDUCT AND DISCRIMINATION

PLNU faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, it is required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at <https://www.pointloma.edu/title-ix>.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias.

PLNU STATEMENT ON LANGUAGE AND BELONGING

PLNU faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard

outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.

If you (or someone you know) have experienced a bias incident regarding language, you can find more information on reporting and resources at www.pointloma.edu/bias.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC ACCOMMODATIONS POLICY

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

STATE AUTHORIZATION

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

Tentative Class Schedule

Wk #	Date	Ch # & Topic	Additional notes
1	1/13 M	Intro to the course and each other (Ch 1)	Get into the rhythm of textbook reading starting Day 1!
	1/15 W	2 Cells of the Nervous System: The Neuron	
	1/17 F	3 Cells of the Nervous System: Glia	

2	1/20 M	MLK Jr Day – no classes	
	1/22 W	5 Ion Movement	
	1/24 F	6 Membrane Potential	Last day to drop semester courses (no record on transcript)
3	1/27 M	7 The Membrane at Rest	
	1/29 W	8 Electrical Activity in Neurons Intro	Quiz 1 Learning Reflection 1 due
	1/31 F	8 Electrical Activity in Neurons & 9 Action Potentials	
4	2/3 M	9 Action Potentials	
	2/5 W	11 Synapse Structure	
	2/7 F	12 Steps in Synaptic Signaling	
5	2/10 M	13 Neurotransmitters (NTs) and Their Receptors	
	2/12 W	14 More on NTs	Quiz 2 Learning Reflection 2 due
	2/14 F	PLNU President's Inauguration - no PM classes	
6	2/17 M	15 NT: ACh	
	2/19 W	16 NT: aa NTs	
	2/21 F	17 & 18 NT: biogenic amines	
7	2/24 M	19 NT: atypical NTs	
	2/26 W	20 Drug and Toxin Effects	
	2/28 F	Midterm Exam	Learning Reflection 3 due
8	3/3 M	Intro to Neuroanatomy; 21 Anatomical Terminology Sheep Brain Dissection or Human Anatomy Lab: TBA	
	3/5 W	23 Brain Anatomy Sheep Brain Dissection or Human Anatomy Lab: TBA	Student-led Class Project team formation
	3/7 F	23 Brain Anatomy Sheep Brain Dissection or Human Anatomy Lab: TBA	Student-led Class Project team chapter selection
	3/10 – 14	Spring Break	
9	3/17 M	22 Brain Development (Brain Structure Differentiation)	

	3/19 W	24 Additional Structures of the NS – meninges, blood vessels, stroke	
	3/21 F	26 Spinal Cord Structure	Quiz 3 Learning Reflection 4 due
10	3/24 M	27 PNS (plus cranial nerves from Ch 23)	
	3/26 W	28 Sensory Systems Intro + 29 first half: The Eye	
	3/28 F	29 & 30 The Visual System	Last day to withdraw from semester courses (“W” on transcript)
11	3/31 M	41 & 42 Reflexes	
	4/2 W	43 & 44 Movement	
	4/4 F	45 Basal Nuclei	Quiz 4 Learning Reflection 5 due
12	4/7 M	Ch 48 – 65 Student led	
	4/9 W	Ch 48 – 65 Student led	
	4/11 F	Ch 48 – 65 Student led	
13	4/14 M	Ch 48 – 65 Student led	
	4/16 W	Ch 48 – 65 Student led	
	4/18 F	Easter Break (4/17-4/21) – no classes	
14	4/21 M	Easter Break (4/17-4/21) – no classes	
	4/23 W	46 Neurodegenerative Disease: Parkinsons Disease	Quiz 5 Learning Reflection 6 due
	4/25 F	47 Neurodegenerative Diseases: Non-Motor (AD)	
15	4/28 M	66 Memory Systems	
	4/30 W	67 Molecular Mechanisms of Memory: Aplysia	
	5/2 F	68 Molecular Mechanisms of Memory: Hippocampus	
	5/7 W	Final Exam 10:30am – 12:30pm	End of Semester Reflection due

Appendix: Participation and Collaboration Rubric

adopted from Kendra Hearn, PhD (U of Michigan, Ann-Arbor)

	2	3	4	5**
Active Listening*	Student has incurred 2 or more instances of unprofessional or inattentive behavior during class. On multiple occasions, s/he uses technology for purposes not related to the course and/or in ways that are distracting to peers and/or the instructor. S/he often has side conversations that are distracting to those around him/her. S/he does not track the speaker with his/her eyes (e.g. head down on desk).	Students is typically professional and attentive during class. S/he has uses technology for purposes not related to the course and/or in a way that is distracting. S/he has occasional side conversations that are sometimes distracting to those around him/her. S/he rarely tracks the speaker with his/her eyes or use non-verbal cues to engage with the speaker.	Student is always professional and attentive during class. S/he uses technology for the purposes of the course and is not distracting. S/he limits side conversations; those in which she may engage are always about what is currently occurring in the class. S/he often tracks the speaker with his/her eyes.	Student is always professional and attentive during class. S/he uses technology for the purposes of the course and is not distracting or easily distracted. S/he doesn't have side conversations. S/he routinely tracks the speaker with his/her eyes, and uses non-verbal cues to engage with the speaker. S/he routinely uses techniques to ensure understanding, such as asking or answering questions. Student responds to iClicker prompts.
Contributions to Discussion and Activities	Student's contributions are disrespectful or shows unwillingness to learn, or s/he does not contribute.	Student's contributions are respectful and inclusive. S/he may, however, contribute rarely or contributes often but dominates the 'air' time. When s/he speaks, his/her comments may be tangential or confusing to the current direction of the group.	Student's contributions are respectful and inclusive. They position him/her as active learner of the topic. S/he watches his/her 'air' time by not dominating the discussion.	Student's contributions are respectful and inclusive. They position him/her as an active learner of the topic. S/he watches his/her 'air' time by not dominating the discussion. His/her comments and questions often improve the thinking of the group.
Preparedness	Student exhibits minimal preparedness in that it is apparent that s/he has read little or none of the materials prior to class as evidenced by no references to the required materials during discussion. S/he does not bring appropriate notes.	Student exhibits moderate preparedness in that it is apparent that s/he has read some of the materials prior to class as evidenced by nominal references to the required materials and bringing appropriate notes.	Student exhibits sufficient preparedness in that it is apparent that s/he has read the materials prior to class by citing references to those materials during class. S/he brings appropriate notes to class.	Student exhibits good preparedness in that it is apparent that s/he has read all materials prior to class by accurately citing references to those materials during discussions and bringing annotated notes to class. It is clearly apparent that s/he has given depth of thought to the topic as his/her comments, questions, and ability to respond to questions.

* Merely attending class does not merit 5 out of 5 points.

** Asking questions is a type of contribution.