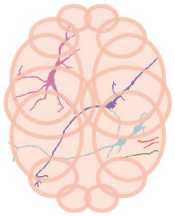
Course Syllabus: Summer Session I, 2023, **Section ID 205411-205414**

BIPN 148
Cellular Basis of Learning and Memory



INSTRUCTOR: Dr. Jill Leutgeb, Ph.D.
Walter F. Heiligenberg Professor of Neuroethology,
Professor of Neurobiology, Department of Neurobiology,
School of Biological Sciences
Kavli Institute for Brain and Mind
email: jleutgeb@ucsd.edu

Office hour: **Via Zoom** = Thursdays, 4:00-5:30 pm, (see Canvas for link)

COURSE DESCRIPTION: This course will include an in-depth presentation of the mechanisms for learning and memory at the molecular, cellular, and systems levels. A goal of the course is to introduce students to current topics in learning and memory research, while also learning the fundamental concepts about the **biology** of learning and memory. To reach this goal this course will also teach students to read and interpret primary research literature.

Students will approach the material through several mechanisms: 1) engaging with new material through listening, discussing, reading, and writing; 2) work with problem sets covering key concepts after each lecture; 3) synthesize understanding and develop science communication skills by distilling complex primary literature into short writing assessments; and 4) exam assessment. **BIPN 148 will be taught as a remote course in Summer Session 1, 2023. Synchronous components (lectures, quizzes) are provided to facilitate immediate and daily opportunities for questions and clarification, which is critical for a fast paced summer course.**

COURSE SCHEDULE: Lectures: Monday-Thursday 9:30-10:50am, **Via Zoom**
Discussion Sections: Friday (see your registered time), **Via Zoom**
See Canvas for Zoom links, as well as the 'Course Schedule' document for a lecture by lecture outline of course content, assignments, and exams.

WELCOME STATEMENT: Welcome to BIPN 148. As your Professor, I value your health, wellbeing, and learning. This quarter I will challenge you in this course to deepen your understanding of how the brain works in the service of memory and to grow your curiosity and critical thinking skills. However, this is not at the expense of your wellbeing. I have built some flexibility into the course with that purpose. Beyond physical health, I encourage you throughout the quarter to make time for yourself to recharge, relax, and rejuvenate, which will aid in your brain's ability to encode and store new information. We will soon learn the biology behind this statement, and why you should all be trying to get enough sleep. You will see in my grading policies that I allow you to drop several assignment scores or one quiz score. This will help with bandwidth for when you have a challenging week or an occasional absence. However, if you have prolonged issues that are affecting your ability to meet the expectations of the course please communicate early on so you are aware of options that often have specific deadlines for implementation. Quiz dates are not flexible so please note them in your schedules right away and follow the steps noted below for any conflicts.

INSTRUCTIONAL ASSISTANTS (IAs):

Adam Shi	Discussion Section	A01	adshi@ucsd.edu
Samantha Mak	Discussion Section	A02	s3mak@ucsd.edu
Sameeha Rashid	Discussion Sections	A03, A04	sarashid@ucsd.edu

IA Office hours: See the class Canvas site for day/time listings and Zoom information. Office hours will begin the first week of the course. There will be 4 office hours offered each week on different days. Additional Quiz Review Sessions will not be scheduled by IAs for this course. Instead, please take advantage of weekly office hours in addition to weekly Discussion Sections. IAs will also monitor the Discussion Board daily. Therefore, there are many ways to receive additional instruction that are more productive and flexible than a typical review session.

COMMUNICATION: To ask questions about course content: attend office hours provided by Dr. Leutgeb or any of the IAs (dates/times/location listed on Canvas), or type your question at any time into the Discussion Board on Canvas. The Discussion Board is monitored daily. This mechanism is preferred to email as it allows all students to benefit from the provided answer from IAs or the Instructor. Because of the large number of students in this course, we cannot answer individual questions on course content via email and these emails will be deleted.

Communication of personal issues related to the course: Please contact the instructor directly via UCSD email or Canvas mail. However, do not rely on either as a sure and immediate form of communication with the instructor. I will do my best to answer emails within one business day. Please have read the course Syllabus before sending an e-mail. Please email your IA only for procedural issues related directly to you, but not about course content. All emails to the IAs and professor should be respectful, include your first and last name in the body of the email, and have BIPN 148 in the subject line.

PREREQUISITES: Please make sure to review information about the nervous system from prerequisite BIPN 140 as well as other physiology/neuroscience classes. Students should have a strong basis in understanding neuronal signaling, including temporal and spatial summation of dendritic input, as well as changes in synaptic integration (course topics introduced in BILD2/BIPN 100 and expanded in BIPN140). IAs will include a primer of these topics the first week of discussion section to refresh your memory if needed.

COURSE MATERIALS

Textbook and Journal Articles

Recommended Textbook*: Memory, From Mind to Molecules*, 2nd edition, by L. R. Squire and E. R. Kandel (2010)

1) Textbook availability: To keep costs down for UCSD students the book author has approved the preparation of an eBook by the UCSD bookstore. The eBook is available for $12.95 online using the following link: https://ucsandiegobookstore.redshelf.com/app/ecom/book/538580/memory-from-mind-to-molecules-reprint-digital-copy-538580-9780100728806-squire

Physical reprints are available in black and white and retail for $25.00. This will be a print on demand option and must be pre-paid. Timeframe for reprint would be 3-5 business days, then ship out or pick up option for receiving the physical print copy. If you prefer this option over the readily available eBook you should call 858-534-4557 or email custom@ad.ucsd.edu to purchase a printed copy of the book if not available online.

2) Journal articles and reviews will also be assigned. The required readings for each lecture are listed in the 'Course Schedule'. Journal articles will be available as pdf files on the course Canvas website. Lecture content should be used to determine what course material is most important for exam assessment. Discussion sections will aid in helping students focus on the most important topics in the assigned reading and primary literature. The course will follow the textbook closely during the first half of the quarter; whereas journal articles will serve as the primary source material for the more recent findings discussed in the second half of the quarter (see the 'Class Schedule' document on Canvas for details). The textbook will still discuss later topics and place them into context within the learning and memory field, however, lectures and assigned articles will exceed the textbook in detail and the discussion of primary research results. Some people find that lecture material is sufficient and do not use their textbook, for this reason the textbook has been listed as optional. Three assigned journal articles of particular significance to course content will serve as sources for graded writing assignments. More detail can be found below on this topic.

Access to Canvas

Course Website: There is a Canvas site for the course. To access this course, visit https://canvas.ucsd.edu/courses. You can also use http://coursefinder.ucsd.edu, which will take you to all of your courses on Canvas. If you need any technical assistance with Canvas please send an email to servicedesk@ucsd.edu. Student accounts are added on the first day of class. Instruction on how to access your

account for logging on to UCSD's Canvas sites can be found here: http://acms.ucsd.edu/students/accounts-and-passwords/index.html. Concurrent enrollment (extension) students are not added automatically. More information for extension students can be found here: https://extension.ucsd.edu/student-resources/

Please check the Canvas site often. Announcements, updates, lectures, lecture slides, Zoom links, reading material, class discussion forums, exam administration, and grades will all be communicated using the course Canvas website.

Computer or tablet and internet connection

BIPN 148 will be taught entirely online during Summer Session I. In order to participate in this course you will need a computer or tablet and a stable internet connection. It is difficult to get by using a smart phone as some course content may not work via the phone, possibly including quizzes.

If you don't have a computer/tablet at home and are concerned about affording one, email vcsa@ucsd.edu to ask if they can help.

Please make sure that you check out this website for resources on how to best learn remotely: https://digitallearning.ucsd.edu/learners/learning-remote.html

HOW THIS COURSE WILL BE ORGANIZED THIS QUARTER

Reading

Reading assignments are provided for each lecture (see class schedule). Lecture content should be used to determine what course material is most important and what to focus on in your reading. Journal articles that are 'Review' articles can be very dense and include information beyond the course content. For this type of reading material focus your attention to the content that aligns with topics presented in lecture.

Lectures

Lectures will be held synchronously on Zoom during our scheduled course time. You will need to set up a Zoom account. UCSD has purchased a Zoom site license for all students, staff, and faculty. You will need to install Zoom on whatever device you plan to use for the quarter. Go to https://ucsd.zoom.us/ to get started. Zoom links for each lecture will be provided on Canvas. You need to be authenticated via Zoom to join (please login to Zoom with your UCSD credentials before the lecture).

Lectures will be offered synchronously to allow students to engage in the lecture and ask questions as the information is presented. Attendance is not mandatory during the regular lecture time, but recommended as course engagement and discussion is critical for better understanding complex data. Please utilize this best practice learning opportunity and ask questions during lecture. Lectures will be recorded and posted on the Canvas course site for later viewing and review. If you do not view a lecture synchronously, you will need to watch the lecture by the start of the next scheduled class period as LCQs (see below) based on that lecture are due before the next scheduled lecture. If the quality of lecture becomes compromised (power outage, long and frequent internet interruptions) then a new recorded lecture will be uploaded (without audience) to replace that lecture. If this becomes a regular problem, then the course will switch to posting asynchronous prerecorded lectures. Any changes will be discussed and announced in class and on Canvas.

Lecture Content Questions (LCQ)

Each lecture is associated with post lecture questions ('Lecture Content Questions'; LCQs). These questions will help you prepare for exams, and should be considered practice exam questions. These will be completed in Canvas, and graded upon completion (1 point each). You will be allowed multiple attempts to achieve the correct answer. A lecture LCQ becomes active after the associated lecture and is due (closes) at 9:30am the following scheduled lecture day. There will be a total of 30 LCQs (2 per lecture). You will need to complete 24 LCQs to receive full credit. This means there will be no makeup of LCQs past the due date, as you have passes that will cover any unexpected issues such as illness, technical problems, or excused absences. LCQs are in place of in class participation points, and provide some course flexibility.

LCQ questions will help you gauge how well you understand key concepts and will prepare you for exams if you use them with this purpose in mind. Of course you could keep attempting the question until the answer is right to get your 1 point, but this will not aid in your learning. To maximize the benefit from these questions do the following: pay attention to whether you can answer the question right away to determine if you understood that concept well. If not, go back to your notes and relearn the concept. After studying the material, try the question again. You should now be successful. If not, you may be missing something fundamental and should seek out help using the many resources available to ask questions in this class (Discussion section, office hours, discussion board). The ultimate goal is to gain a mastery of lecture content. This course will build on itself, with later concepts requiring a mastery and integration of previously learned information. Don't get behind.

Discussion Section: Sections will meet on Fridays, beginning July 7th. The date and time of each section is listed in the Schedule of Classes. Discussion sections will be offered via Zoom. Zoom links for each section are provided on Canvas, as well as any passwords. Attendance at section is optional, but when assessed in previous years, the majority of students who attended BIPN148 section greater than 70% of the time received a B+ or higher in the course. The sections are designed to provide a forum for you to ask questions about the course material, and receive additional instruction. The following will ONLY be covered in section: review of basic neurobiology concepts, instruction for reading primary research literature, discussion of LCQ questions and answers, review of correct answers for course quizzes, instruction of writing assignment, feedback on first writing assignment, quiz review.

Writing Assignments

A primary goal of this course is to better understand how to read and interpret primary research literature. We will use as source information many prominent and important original research papers in the field of learning and memory. Three of these seminal papers have been selected as potential topics for your writing assignments (see * blue references in your Course Schedule). More detailed instruction on this topic will be available on Canvas, as a topic in Lecture 7, and discussed in Discussion on July 21st. In short, you will be expected to complete 2 assignments (20 points each, 40 points total). Deadlines are listed in the Course Schedule, and should be turned in using Canvas (Turnitin). Your writing assignments need to be turned in by 11:59 pm on the assigned day.

Assignment. You are asked to respond to several questions about a research article listed as assigned reading in this course. You will need to understand and interpret the research article so that you can clearly communicate its contents and impact to answer these questions. To do this well you will need to have a solid understanding of the key findings of each paper. For this reason the due dates for each writing assignment follows lectures discussing the paper. You will be provided with the grading rubric beforehand (see Canvas) so that you are aware of how and what will be graded in your written piece.

You will need to be careful to not borrow language or material from the authors of the paper, other sources on the Internet, as well as past classes. Plagiarism will be assessed and monitored using Turnitin on Canvas. Be creative and speak from your own voice when writing your responses. When you turn your assignment in on Canvas you will be able to see the plagiarism score created by Turnitin. Only papers with a Blue or Green plagiarism score will be graded (< 20%), papers with a yellow, orange, or red plagiarism score (> 20%) will not be graded and will receive a 0 (*This score already considers the repetition of author names and institutions, as well as commons agents and methods*).

Writing Assignments: Due dates and the papers that will be used for each assignment are listed below and also appear in the course schedule.

1) Papers: Whitlock et al., (2006) *Science, or* Nabavi et al., (2014) *Nature* — Due Tuesday, July 25th
2) Bakker et al., (2008) *Science* — Due Tuesday, August 1st

Quizzes

Five in class quizzes will be given throughout the quarter on the dates indicated in the course schedule (also listed below). In class quizzes will serve as Exams for this remote summer course. Each quiz covers the material from the previous 3 lectures. The quizzes will be administered on Canvas, using a similar format to the LCQs for each lecture (consider LCQ questions practice both for the procedure as well as the content of a quiz). Each quiz will be 30 minutes long and will be available on Canvas from 9:40am and close at 10:50am. This is during lecture time for BIPN 148 as scheduled by the Registrar, so you should not have class conflicts during these times. Canvas will allow you to answer each question in turn and allow you to go backward within the quiz. Each student will receive questions in a random order with answers randomized. See Canvas for the quiz administration and testing protocol ("Course Information and Syllabus" Module).

Quiz Schedule:

Quiz 1	Monday, July 10th	Lectures 1-3
Quiz 2	Monday, July 17th	Lectures 4-6
Quiz 3	Monday, July 24th	Lectures 7-9
Quiz 4	Monday, July 31st	Lectures 10-12
Quiz 5	Saturday, August 5th	Lectures 13-15

Quizzes are multiple choice, each totaling 20 points. Your lowest quiz score will be dropped. The overall quiz score will be out of 80 points (top 4 scores out of 5 possible quizzes). This policy will cover the occasional technical glitch or sick day. If your internet connection fails or your laptop runs out of battery halfway through a quiz, you don't need to email the instructor. This will be your lowest-scoring exam which will be dropped. For this reason, it is strongly recommended that you study for and take all quizzes so you have an insurance policy against something going wrong for one of them.

If you cannot take ONE of the quizzes at the scheduled time, it is fine, that will be the score that gets dropped. If you know in advance that you absolutely cannot take 4 of the quizzes at the scheduled times, than email the course instructor BEFORE the first quiz. During the quarter, if you become unable to take a quiz due to serious illness or other emergency AND you have already missed one quiz, email the instructor before the quiz (the earlier the better) and we will discuss your options.

The quizzes will be administered on Canvas, using a similar format to the LCQs for each lecture. If you have had technical problems taking the LCQs, please resolve those by the time of the first quiz. The IT people have suggested updating your web browser or using Chrome if you are having problems. If that fails, email servicedesk@ucsd.edu.

Take the quizzes on your own, without help from other people or other resources other than your own brain. The quizzes are closed-book, meaning that you may not consult the book/readings, lectures, Internet, etc. Do not discuss or share information about the exam with other students in the class until the quiz is over. We may opt to use "Proctorio" if the protocol for quiz administration is changed for any reason from the timed multiple choice option described above. Please review the Academic Integrity policy at the end of this syllabus.

Students suspected of academic integrity violations on quizzes will be invited to Zoom follow-up meetings where they will be asked to (in real time, on video) justify their answers. If the instructor isn't convinced during the meeting, or if the student refuses to participate, the violations will be reported to the Academic Integrity Office.

Lecture slides

Lecture slices will be available on Canvas after each lecture. Use these to review and test yourself on course content. Please do NOT post lectures or class documents on public websites like Course Hero, Chegg, or others.

Canvas Discussion Board

There will be discussion boards on Canvas where you can post your questions and answer other students' questions. IAs will monitor and answer questions daily, but I also encourage you to help each other! Please be respectful and courteous.

GRADING:

Your final grade is based upon the following: (with % of final course grade indicated)

1) LCQs (1 point each, 24 points possible) = 10%
2) Writing Prompts (20 points each, 40 points possible) = 30 %
3) Quizzes (Quizzes 20 points each, 80 points possible) = 60%

To determine your overall grade, please use the following formula:
Total course percentage = [(% of total LCQ points) x 0.10] + [(% of total writing prompt points) x 0.30] + [(% of total exam points) x 0.60]

Grading Scale: (based on total course percentage, decimal places are rounded to the nearest whole number)

A 93% to <100%
A- 90% to <93%
B+ 86% to <90%
B 83% to <86%
B- 80% to <83%
C+ 76% to < 80%
C 73% to <76%
C- 70% to <73% (everything above this line is considered passing if grading P, NP)
D <70% to 60% (there is no D+ or D-)
F < 60%

LETTER OF RECOMMENDATION POLICY: I only write letters of recommendation for students that I have gotten to know personally by either having worked in my laboratory, served as an instructional assistant in one of my courses, served on a committee I chaired, participated in coffee with a professor, asked questions in lecture or attended office hours regularly. If a student has performed exceptionally well in the course, but does not fit into these categories, I would only be able to provide a brief letter that provides a description of this course, and your rank within the class. These types of letters do serve a purpose in some circumstances, but may not be well suited for applications to medical school or graduate school. An agreement to write such a letter would also be contingent upon my workload obligations and the time available between the request and the deadline. Please be aware of this policy while determining your involvement in the course. You may also want to consider taking a BIPN 194 seminar course to interact closely and regularly with a Neurobiology professor in a small class size with lots of discussion. Such interactions may better facilitate the type of recommendation letter you are seeking.

STUDENTS WITH SPECIAL CIRCUMSTANCES: UCSD is committed to education for all people. Services and reasonable accommodations are available to students with temporary and permanent disabilities, to students with DACA or undocumented status, to students facing mental health issues, other personal situations, and to students with other kinds of learning needs. Please feel free to let the instructor know if there are circumstances affecting your ability to participate in class. Some resources that might be of use include:

- Office for Student with Disability, https://students.ucsd.edu/well-being/disability-services/index.html
- UC San Diego CAPS (Counseling & Psychological Services), https://wellness.ucsd.edu/CAPS/Pages/default.aspx

- UC San Diego Undocumented Student Services, https://uss.ucsd.edu/ Note: a list of campus resources can be found here: https://students.ucsd.edu/sponsor/undoc/resources/index.html
- Learning Strategies Center, https://commons.ucsd.edu/academic-support/learning-strategies/index.html

Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. OSD Academic Liaisons also need to receive current AFAs. For more information, contact the OSD at (858) 534.4382 (V); (858) 534-9709 (TTY); osd@ucsd.edu, or http://osd.ucsd.edu. You will need to coordinate scheduling of quizzes with the instructor. All of these arrangements should be made within the first week of the session.

ACADEMIC DISHONESTY: All suspicions of academic misconduct will be reported to the Academic Integrity Office according to university policy. Academic misconduct is not just blatant cheating (e.g., copying off another student during an exam), but what you might have thought of as "minor cheating" in high school. In particular, academic misconduct includes:

- writing an email that includes fabricated statements.
- completing another student's work or having someone complete your work.
- faking a family emergency or medical condition.
- procuring, providing, or accepting any material that contains questions or answers to any examination or assignment unless student's possession of the material has been authorized by the instructor.
- employing aids in undertaking course work or in completing any exam or assignment that are not authorized by the instructor.

The Policy on Integrity of Scholarship (academicintegrity.ucsd.edu) and this syllabus list some of the standards by which you are expected to complete your academic work, but your good ethical judgment (or asking for advice) is also expected as every behavior that is unethical or not in the spirit of academic integrity cannot be listed here.

Those students found to have committed academic misconduct will face administrative sanctions imposed by their college Dean of Student Affairs and academic sanctions imposed by the instructor. The standard administrative sanctions include: the creation of a disciplinary record (which will be checked by graduate and professional schools); disciplinary probation; and attendance at an Academic Integrity Seminar (at a cost of $75). Students can also face suspension and dismissal from the University; those sanctions are not at the instructors' discretion. Academic sanctions can range from an F on the exam (i.e., receive zero points for that exam) to an F in the class. The appropriate sanctions are determined by the egregiousness of the Policy violation. Students who assist in or are complicit with cheating could also be in violation of the Policy. Thus, students who become aware of their peers either facilitating academic misconduct or committing it should report their suspicions to an instructor for investigation.

See http://weber.ucsd.edu/~dkjordan/resources/cheat.html for additional information.