

BIPN 142

Systems Neurobiology

Winter Quarter 2018

Instructor:	Jing Wang Bonner Hall 2218 534-5597 jw800@ucsd.edu	<i>Office Hours:</i> Fridays, 11:30 AM – 12:30 PM
Instructor Assistant:	Brian Lien blien@ucsd.edu	<i>Office Hours:</i> Mondays, 3:30 – 4:40 PM Biomed Research Facility II Lobby
Instructor Assistant:	Ye Zhang yez024@ucsd.edu	<i>Office Hours:</i> Tuesdays, 11:00 AM – 12:00 PM Bonner Hall 4406

Class Meetings: Tuesday & Thursday, 9:30 AM to 10:50 AM, Solis 104

Sections: Optional. They begin in the SECOND week of class.

Web Site: TritonEd, with your UCSD e-mail username and password

Midterm Exams: January 30 and February 27 (in class)

Final Exam: Tuesday, March 20, 8:00 AM – 11:00 AM, **TBA**

Textbooks: Required: Purves, D., et al., Neuroscience, 5th Edition. Sinauer, 2012.

Library Course Reserves: 2 copies of Purves.

Prerequisites: BIPN 100 (Human Physiology I) or BIPN 140 (Cellular Neurobiology).

Sections: Sections are optional, but highly recommended. They provide a forum for students to ask detailed questions, have in-depth discussions, and discuss problem sets. The precise format will be determined by the IAs. Participation in sections will be used to determine grades of students who are on the borderline between two class grades. Section participation will also make students eligible for an “A+” grade (without participation, the maximum grade is an “A”). For these purposes, participation is defined as active participation in discussions, not just attendance. Sections begin in the SECOND week of class.

<u>Section</u>	<u>Date</u>	<u>Time</u>	<u>Room</u>	<u>IA</u>
A01	Mon	5-5:50 PM	YORK3000A	Brian Lien
A02	Mon	6-6:50 PM	YORK3000A	Ye Zhang
A04	Tue	8-8:50 AM	HSS1305	Brian Lien
A05	Wed	8-8:50 AM	HSS1305	Ye Zhang

Grading Policy: Each of the **Midterm Exams** counts for 25% of the course grade. The **Final Exam**, which will be inclusive of all material, counts for 50% of the course grade. Exams will consist of multiple choice and short essay questions. In order for students to gauge their progress, **4 problem sets** will be assigned during the quarter. These sets will not be handed in or graded, but will be discussed in sections. The format, level of difficulty, and scope of the problem sets will be similar to that of the exams. The problem sets therefore provide a means for students to check their understanding of the material throughout the course. **Section participation** is optional. However, section participation will be used to boost grades of students who are on the line between two class grades (e.g., a student who just missed an “A” but who regularly participated in sections will be boosted to an “A” grade). For these purposes, participation is defined as active participation in discussions, not just attendance. Section participation will also make students eligible for an “A+” grade (without participation, the maximum grade is an “A”).

- How to succeed Lectures. Lectures will cover more material than the textbook chapters. Therefore, lecture attendance (or access to really good notes) is absolutely essential. **You will not do well in this course if you stay home and read the textbook.**
Required readings. You can save yourself a tremendous amount of work if you *read the required chapter(s) before attending lecture*. This lets you be actively engaged and think about the material during lecture, rather than waiting until just before the exam. *This is a much more efficient way to learn!*
Problem Sets. Problem sets will be assigned periodically, but will not be handed in or graded. Instead, answers to problem sets will be discussed at section. The purpose is (1) to allow you to think in detail about important concepts, and (2) to let you gauge your grasp of the material well before the exams. You will get MUCH more out of the class if you take the problem sets seriously, and write out answers before attending section.
Sections. Participation in sections is optional, but can provide credit towards a higher grade (see Sections, above).
- Difficulty of Course: This is a difficult course that requires a high level of commitment to succeed. You will be expected to know a large number of basic facts, and will be required to synthesize these facts to form abstract concepts about brain function. You will not do well if you simply memorize the facts presented in the textbook or lecture.
- Supplemental Readings: Several cool topics that we don't have time to cover in class are introduced in supplemental readings which will be available on the course web site (TritonEd). You will not be tested on this material. You are not required to read it. It is only included to whet your appetite for more neuroscience!
- Regrades: Requests for exam regrades must be made **in writing** to the instructor or to the IA within one week after the exam is returned. On a separate sheet of paper, please explain concisely why you deserve more credit. We cannot honor verbal requests for regrades. Only exams written in non-erasable pen will be eligible for regrades.
- Cheating: Cheating will not be tolerated. If you obtain or provide information in an exam or submit an altered exam for regrading, you will be given an F in the course and reported to the dean of your college. Exams will be closed-book and closed-notes. Please note that graded exams are routinely photocopied for comparison with submitted regrades.
- Missed exams: The only valid excuse for missing an exam is a medical reason or family emergency. Appropriate documentation is required. Make-up exams will be conducted orally at a time arranged with the instructor.

INTRODUCTORY MATERIAL

9-Jan	1	Purv 1-2	Overview of Neuronal Structure and Function Electrical Properties of Neurons I
11-Jan	2	Purv 3-4	Electrical Properties of Neurons II
16-Jan	3	Purv 5-6	Synaptic Transmission

SENSORY SYSTEMS

18-Jan	4	Purv 9	Somatosensory System I: Touch
23-Jan	5	Purv 9-10	Somatosensory System II: Pain and Position
25-Jan	6	Purv 11	Vision I: The eye, the retina, and phototransduction

MIDTERM EXAM I (in class)

30-Jan	---		
1-Feb	7	Purv 12	Vision II: Central processing of vision
6-Feb	8	Purv 15	Chemical Senses
8-Feb	9	Purv 13-14	Hearing I: The cochlea
13-Feb	10	Purv 13	Hearing II: Central auditory processing.

MOTOR SYSTEMS

15-Feb	11	Purv 16	Spinal Cord and Muscle Central Pattern Generators
20-Feb	12	Purv 17	Control of Complex Movement
22-Feb	13	Purv 18-19	Basal Ganglia and Cerebellum
27-Feb	---		MIDTERM EXAM II (in class)

HIGHER FUNCTIONS

1-Mar	14	Purv 29	Emotion and Social Bonding
6-Mar	15	Purv 28	Sleep, Arousal and Circadian Rhythms
8-Mar	16		Homeostasis: active regulation of internal states
13-Mar	17	Purv 8,24	Learning and Memory I: Simple forms of learning and development plasticity
15-Mar	18	Purv 8,31	Learning and Memory II: Hippocampal learning and LTP
20-Mar			FINAL EXAM (Location, TBA)

Problem sets will be handed out for discussion in the following week's sections.