

## CELLULAR NEUROBIOLOGY BIPN 140

### SYLLABUS

**Professors:** Nick Spitzer and Chih-Ying Su  
**Location:** Online Zoom; Tu & Th 2:00 – 3:20 pm.

DATE	LECTURE TOPIC	LECTURER	READING
Oct. 1	1 Neurons and Glia	Spitzer	Chap. 1
6	2 Electrical Signaling	Spitzer	Chap. 2
8	3 Ion Channels and Currents	Spitzer	Chap. 2 & 3
13	4 Combinations of Currents I	Spitzer	Chap. 3
15	5 Combinations of Currents II	Spitzer	Chap. 3 & 4
20	6 Channel Structure & Function	Spitzer	Chap. 4
22	7 Synaptic Transmission I	Su	Chap. 5
27	<b>1<sup>st</sup> MIDTERM EXAM</b>		
29	8 Synaptic Transmission II	Su	Chap. 5 & 6
Nov. 3	9 Neurotransmitters/Receptors	Su	Chap. 6
5	10 Intracellular Signaling	Su	Chap. 7
10	11 Synaptic Plasticity I	Su	Chap. 7 & 8
12	12 Synaptic Plasticity II	Su	Chap. 8
17	<b>2<sup>nd</sup> MIDTERM EXAM</b>		
19	13 Synapse Formation	Su	Chap. 23: 521-535
24	14 Learning & Memory	Su	Ch 24: 537-543; Ch 31: 695-708
26	<b>THANKSGIVING</b>		
Dec. 1	15 The Chemical Senses	Su	Chap. 15
3	16 Early Brain Development	Spitzer	Chap. 22
8	17 Axon Guidance & Target Selection	Spitzer	Chap. 23
10	18 Plasticity & Circuit Dynamics	Spitzer	Chap. 24
17	<b>FINAL EXAM</b> Thursday of exam week		

**Lectures:** Will be recorded and the recordings will be available on Canvas for asynchronous viewing.

**Text:** *Neuroscience*, Purves et al. (6th edition, Sinauer Associates Publishers)

**Class website:** Canvas

**Sections:** Start the week of October 5<sup>th</sup>.

**Instructors:** Chih-Ying Su, 4402 Bonner Hall, c8su@ucsd.edu, 822-1128; Nick Spitzer, 3222A Pacific Hall, nspitzer@ucsd.edu, 534-3896.

**Office hours:** Chih-Ying (Zoom): Mon. & Wed. 1-2 pm. Nick (on Zoom): Mon. & Wed. 4-5 pm and other times following email arrangement.

**Instructional Assistants:** Sunnie Hong, Barbara Liu

**Office Hours:** Sunnie, Thursday 1pm. Barbara, Tuesday 4pm.

**Problem Sets:** The 8 problem sets over the course of the quarter consist of questions that will help you evaluate your understanding of the material covered in the lectures and the reading. They are similar to questions you will have to answer on exams. To get the most out of them, treat them like exams. **In the past there has been an excellent correlation between those who worked through the problem sets and those who received high grades in the course.** They will not be graded but will be discussed in section. The answers will be available on the class website after the week in which they are discussed.

**Discussion sections:** The sections are useful opportunities to go over material that has been presented in the lectures and in the reading. They are also valuable because the problem set questions and answers will be discussed.

**Exams:** The grade in the course depends on two midterm exams and a final exam. The two midterms are each worth 35% of the grade and the final is worth 30%. **Exams will consist of short answers, problems and data interpretation. The final exam will consist of the equivalent of a midterm exam on the new material since the 2<sup>nd</sup> midterm. All exams will be open-book, open-note over a one-day period.**

The exams will cover material from lectures, reading, and problem sets. The lectures are most important since they highlight matters of particular significance and discuss issues that may be complex. The text is valuable since this reading provides further background and the instructor may not cover all of the material in lecture. The problem sets are useful since they provide excellent practice in working out exam questions and some of the questions on the exams may be drawn from the problem sets.

**Research Articles:** A research article will be presented at the end of each lecture, related to the material in that lecture. Bonus questions on the articles will be included on each exam, for extra credit. They are optional.