BIPN 142

Systems Neurobiology

Winter Quarter 2017

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Office Hours: TBA

Instructor Assistant: Chenyu Wang
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Office Hours: TBA

Class Meetings: Tuesday & Thursday, 9:30 AM to 10:50 AM, HSS 1330

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

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

Midterm Exams: January 31 and February 28 (in class)

Final Exam: Tuesday, March 21, 8:00 AM – 11:00 AM, TBA

On Reserve at Biomedical Library: 3 copies of Purves (in process).

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.

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<thead>
<tr>
<th>Section</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
<th>IA</th>
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</thead>
<tbody>
<tr>
<td>A01</td>
<td>Wed</td>
<td>8-8:50 AM</td>
<td>CENTR207</td>
<td>Chenyu Wang</td>
</tr>
<tr>
<td>A02</td>
<td>Wed</td>
<td>4-4:50 PM</td>
<td>APM2301</td>
<td>Ipshita Zutshi</td>
</tr>
<tr>
<td>A03</td>
<td>Wed</td>
<td>7-4:50 PM</td>
<td>SOLIS109</td>
<td>Ipshita Zutshi</td>
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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”).
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

10-Jan  1 Purv 1-2 Overview of Neuronal Structure and Function
12-Jan  2 Purv 3-4 Electrical Properties of Neurons I
17-Jan  3 Purv 5-6 Electrical Properties of Neurons II

SENSORY SYSTEMS

19-Jan  4 Purv 9 Somatosensory System I: Touch
24-Jan  5 Purv 9-10 Somatosensory System II: Pain and Position
26-Jan  6 Purv 11 Vision I: The eye, the retina, and phototransduction
31-Jan  ---- MIDTERM EXAM I (in class)

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

MOTOR SYSTEMS

16-Feb 11 Purv 16 Spinal Cord and Muscle
21-Feb 12 Purv 17 Central Pattern Generators
23-Feb 13 Purv 18-19 Basal Ganglia and Cerebellum
28-Feb  ---- MIDTERM EXAM II (in class)

HIGHER FUNCTIONS

2-Mar  14 Purv 29 Emotion and Social Bonding
7-Mar  15 Purv 28 Sleep, Arousal and Circadian Rhythms
9-Mar  16 Purv 29 Homeostasis: active regulation of internal states
14-Mar 17 Purv 8,24 Learning and Memory I: Simple forms of learning and development plasticity
16-Mar 18 Purv 8,31 Learning and Memory II: Hippocampal learning and LTP

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