

**Neurobiology: Cellular and Molecular
Physiology of the Nervous System
Biology 4360**



**California State University, Los Angeles
Department of Biological Sciences
Fall 2018**

Biol 4360 (01)

Course Information:

Instructor: Mario L. Mata, Ph.D.

Class Schedule: MoWe: 12:15 – 1:30 pm

Class Room: SH 239

Office Hours: MoWe: 9:00 – 10:00 am

E-mail: mmata23@calstatela.edu

Phone number: (818) 416 – 5496

Course Textbook: From Neuron to Brain (5th Edition) by Nicholls, et al., Sinauer Inc.

Course Description:

This lecture course examines the connection between neurons and our world. We will take a journey into the complete understanding of what neurons are and how they process information about the world around us. An overview of current methods used for collecting neuroscientific data will be given as well.

Course Goals and Student Learning Objectives:

Upon completion of the course, students will demonstrate familiarity with the following concepts:

- the structure of neurons (plasma membrane, ion channels, ionic constituents, dendrites, soma, axon, etc...)
- action potentials and their generation
- specific neuroanatomical areas and their functions
- synaptic transmission
- psychopharmacology
- sensation and perception
- learning and memory
- neuroscience research methods (i.e., patch clamp recording, fMRI, EEG)

Attendance & Participation

This is a lecture/discussion course. You will be expected to complete assigned readings before coming to class. This will facilitate your active involvement in both lectures and discussions. Your participation, questions, and comments during class are encouraged. Our time in class will be used to discuss those readings and their implications, both in small groups and as whole class activities. The focus will not be on acquiring factual knowledge, but rather on reading, thinking critically about what you read, and applying what you read in classroom discussions. Therefore, class attendance and participation are required for you to master the course content. Participation points will be awarded

via a variety of forms, including active participation in class discussions, written responses to a question in class, or working together with other students in a group to answer questions. You are not expected to say all of the right answers – however, you should demonstrate thoughtfulness and preparation.

Course Requirements & Evaluation

* Late work will not be accepted.

* There is no extra credit.

Evaluation of student performance will include the following major components. There will be no additional grading options unless there are extraordinary extenuating circumstances (e.g., properly documented medical conditions). Final grades will be determined in the following manner:

In Class Participation =	50 points	A = 360 – 400 points
Midterm Exam =	100 points	B = 320 – 359 points
Final Exam =	100 points	C = 280 – 319 points
Research Paper =	100 points	D = 240 – 279 points
Group Presentation =	50 points	F = 0 – 239 points
Total = 400 points		

Midterm and Final Exam

The midterm and final exams will cover textbook readings, lectures, and class discussions. The exams will consist of multiple-choice questions and several short answer/essay questions. The final exam is not cumulative. Makeup exams are not generally given and will be given only (without penalty) under extenuating circumstances (e.g., properly documented family/medical emergencies). This will be left to the discretion of the instructor. If you miss any of the exams for other reasons (e.g., you had to work late, you forgot there was an exam) you will not be permitted to make up the exam. If you miss an exam, it is your responsibility to notify me (e-mail or call) within 24 hours of the exam date/time with appropriate written documentation. If these steps are not taken, you will not be allowed to make up the exam and will earn a “0” for that exam.

Research Paper

Each student will find an article from a scholarly journal related to Neurobiology or Neuroscience. Write a 3-4 page paper to summarize the article. Please follow APA guidelines for formatting instructions. This format will be detailed in class and is demonstrated in a link on the class Moodle website. The paper will be due on the day of the final exam.

Group Presentation

In groups of two (only), students will find a research article on a neuroscientific topic that interests you. You and your partner are tasked with creating a presentation covering the major points of this article. Your group will give a 10-minute presentation summarizing the research article using visuals/PowerPoint to augment your talk. Both students in the group must participate and speak in this presentation.

Class Etiquette & Respect for Diversity

We wish to foster a safe learning environment. Because the class will represent a diversity of individual beliefs, backgrounds, and experiences, every member of this class must show respect for every other member of this class. This includes comments made in class, as well as any electronic communication such as e-mail messages. Each voice in the class has something of value to contribute. Please respect the different experiences, beliefs, and values expressed by your fellow students and instructor, and refrain from derogatory comments about other individuals, cultures, groups, or viewpoints. You are encouraged to comment, question, or critique an idea but please do not attack an individual. Working as a community of learners, we can build a polite and respectful course ambience.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Students should be aware of the current deadlines and penalties for adding and dropping classes: <https://get.calstatela.edu/Registrar.htm>.

Academic Integrity Policy

Students are responsible for knowing CSULA policy regarding academic honesty.

Please visit:

http://www.calstatela.edu/sites/default/files/groups/Judicial%20Affairs/Docs/academic_honesty.pdf

All of your work must be your own, unless collaboration is authorized by the instructor, in which case you must, in writing, acknowledge the help you have received. Presenting as one's own the words, ideas, or expression of another in any form is cheating through plagiarism, and will not be tolerated. Students are responsible for knowing the school policy regarding academic honesty. All acts of dishonesty in any work product constitute academic misconduct. This includes, but is not limited to, cheating, plagiarism, fabrication of information, and abetting any of the above. CSULA has specific academic dishonesty administrative procedures and these policies will be followed in the event of academic misconduct.

Student Disability Accommodation

Americans with Disabilities Act (ADA): Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation. Persons who wish to request disability related accommodations should contact the Office for Student with Disabilities (OSD), Administration Building 127, 323-343-3140/323-343-3139 (TDD). Email: OSD@calstatela.edu. Some accommodations may take up to several weeks to arrange (<http://web.calstatela.edu/univ/osd/>).

Week	Date	Theme	Chapter
1	Aug 20 Aug 22	Introduction Molyneux's Problem Principles of Signaling & Organization	handout 1
2	Aug 27 Aug 29	Ion Channels & Signaling	4
3	Sept 3 Sept 5	Labor Day – No Class Structure of Ion Channels	5
4	Sept 10 Sept 12	Ionic Basis of the Resting Potential Research Article Title Due	6
5	Sept 17 Sept 19	Ionic Basis of the Action Potential	7
6	Sept 24 Sept 26	Mechanisms of Direct Synaptic Transmission	11
7	Oct 1 Oct 3		11
8	Oct 8 Oct 10	MIDTERM EXAM (Chapters 1, 4, 5, 6, & 7) Indirect Mechanisms of Synaptic Transmission	12
9	Oct 15 Oct 17		12
10	Oct 22 Oct 24	Synaptic Plasticity	16
11	Oct 29 Oct 31	Sensory Transduction	16 19
12	Nov 5 Nov 7	Signaling in the Visual System	19 2
13	Nov 12 Nov 14	Veterans Day; University closed Signaling in the Visual System	2
14	Nov 19-21 Nov 22-24	Fall Recess – No Classes Thanksgiving Holiday, Campus Closed	
15	Nov 26 Nov 28	Presentations Presentations	
16	Dec 3 Dec 5	Presentations Presentations	
17	Dec 10-15	FINAL EXAM (Chapters 11, 12, 16, 19, & 2)	

