Physiology 67: Exploring Neuroscience: An Introduction to the Brain

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Lecture: MW 12:30-2:00pm, Science Rm. 300

Required Books:

Neuroscience Exploring the Brain. (3rd ed or later) by Mark Bear, Barry Connors, and Michael Paradiso. Published by Lippincott Williams & Wilkins, 2007. ISBN 0-7817-6003-8

Course Description:

Physiology 67 is intended to introduce students to the fundamental principles of the human nervous system through lecture and laboratory activities. It is designed to expose students to topical questions in the field of neural science, and to equip students with the rational thinking skills necessary to evaluate new discoveries in this field. To accomplish this, this course will investigate cellular communication, simple reflexes. Building upon this foundation we will advance to an analysis of more complex neural networks and behaviors such as consciousness, coordinated movement, emotions, motivation, and memory. The method of instruction will be primarily lecture, associated activities and independent research. The course while language intensive is intended for any and all students interested in understanding the science behind the human brain.

Student Learning Outcomes:

Upon completion of this course a student will be able to:

A. Describe the general anatomy of neurons and the organization of the human nervous system including functional anatomy associated with input from somatic sensory, vision, auditory, vestibular and chemical senses.
B. Summarize mechanisms associated with cellular events such as action potentials, synaptic transmission and myelinization of axons and explain their impact on larger scale neuronal processing such as hemispheric specialization, simple reflexes, coordination, proprioception and the control of movement.
C. Evaluate multiple theories of memory encoding and relate them to principles of Hebbian synapse formation, Long Term Potentiation and synaptic plasticity.
D. Analyze topics associated with language lateralization, sleep, consciousness, motivation, development and aging of the nervous system.
E. Distinguish similarities and differences between the processing of different sensory modalities.
F. Appraise and synthesize new developments in the field of neuroscience.

Attendance:

Because so much of the information necessary for student success will be covered in lectures, attendance is required for student success. Students are expected to attend

all class lectures and will have an opportunity to supplement the lecture content with optional laboratory sessions and research activities. Students may be dropped and/or have their grade lowered for excessive absences. Tardiness is considered an absence. If a student misses two or more classes or consistently arrives tardy to class the instructor reserves the right to remove that student from the course. While every reasonable effort will be made to accommodate unexpected illnesses and emergencies, it is the responsibility of the student to get the information he or she missed during their absence, including problem sets and other assignments. In class **midterms and final exams can not be made up or taken late**.

Classroom Etiquette:

- Please arrive to class on time and ready to work.
- Please turn off all cell phones and pagers while in class.
- Students are required to know and observe all "Rules of Student Conduct" contained in the CCSF catalog at all times while in class and on campus.
- If any student requires any reasonable accommodation due to a disability please inform the instructor within the first two weeks of class.

Enrollment:

Your enrollment status is your responsibility. You must be present at the first class meeting or you will be dropped as a "no show". You must be officially enrolled in the course by the college deadline for adding courses. Nobody will be admitted past the add/drop deadline. If you decide to terminate enrolment, you must file the proper forms for both the lecture and laboratory by the college deadlines. Failure to do so may result in a final grade of "F".

Cheating:

During any in-class examination, you may not consult any written material or electronic devices unless so directed. You may no make verbal or non-verbal communication with any person other than the instructor. You may not use another students examination answers with or without his or her consent. Any violation of these rules will be regarded as **cheating** and **will result in an automatic grade of F for that exam. In addition the instructor reserves the right to administer negative course points for acts of cheating making it very possible one act of cheating will result in failure of the entire course.**

Assignments:

In this class you will be asked to actively participate in the material by both attending class participating in the discussions and reading assigned textbook chapters and associated materials outside of class. You should be prepared to schedule and devote a significant amount of time outside class to class reading and research. As our time together in class is limited we will be focusing our class discussions on the most interesting, difficult or salient aspects of the assigned reading topics. Your active participation in these discussions is necessary and required for the class to be a success and we will be asking you to come to class prepared with questions and contributions to the class discussion. Part of your final grade will be based on the quality of your classroom participation. There will also be a midterm and final exam to assess student retention and assimilation of concepts covered in class lecture and discussion.

In addition, Physiology 67 will require you to do some independent research on assigned topics outside of the scheduled class times and present your findings to the class in the form of a brief oral presentation. Details of these assignments will be provided in class.

Grading and Student Evaluation:

Grades will be based on a point system, consisting of:

In Lecture:

In Class Participation/Questions	100 pts
In Class Research Presentations	100 pts
Midterm:	150 pts
Final	200 pts
Total points possible	**550pts**

There is no extra credit available.

Phys 67 **Lecture Schedule** **Spring 2016**

Date	Mon-Wed	Topic	Assignments	Textbook (Bear et al 3rd)
		BRAIN BASICS		
20-Jan	W	Introduction		1
25-Jan	M	Anatomy/nomenclature/General structures		2,7
27-Jan	W			
1-Feb	M	Anatomy/development		23
3-Feb	W	Neurons – Action potential/myelin	Open lab option 2-4:30pm	3,4
8-Feb	M	Anatomy/Physiology- Synapses		5
10-Feb	W	Neurotransmitters		6
		WHAT GOES IN AND OUT		
15-Feb	M	***Holiday (no Class)***		7
17-Feb	W	Motor Systems – Spinal reflexes		
22-Feb	M	Motor Systems – higher order reflexes		8
24-Feb	W	Sensory – taste & smell		
29-Feb	M	Sensory- touch		12
2-Mar	W	Sensory – vision - hearing		10,11
7-Mar	M	Sensory - TBD		
9-Mar	W	TBD		
14-Mar	M	**Midterm**	Research topics handed out	
		COMPLICATED REFLEXES		
16-Mar	W	Hemispheric Specialization	Research topics assigned	20,21
21-Mar	M	Language		
23-Mar	W	Plasticity		25
		Spring Break March 28- April 3		
4-Apr	M	Memory		24
6-Apr	W	Sleep		19
11-Apr	M	Emotion, Motivation		18
13-Apr	W	Emotion, Motivation		
18-Apr	M	Stress and Feeding		16
20-Apr	W	Drug addiction	Research present.	
		META SYSTEMS (What Research Tells Us)		
25-Apr	M	Gender	Research present.	17
27-Apr	W	Aging	Research present.	
2-May	M	Mental Disorders and research	Research present.	22
4-May	W	Mental Disorders and research	Research present.	
9-May	M	Mental Disorders and research		
11-May	W	Mental Disorders and research	Research present.	
16-May	M	Mental Disorders and research	Research present.	
18-May	W	Consciousness/God Lobe/ Summary	Research present.TBD	

Final: Fri. May 20, 11:00 am