BISC-230xg, **Biology of the Brain**

Fall Semester 2020

Course Description: This is a GE course (D, Life Sciences) designed for non-science majors and is not available for major credit. Topics to be considered include the structure and function of the brain of humans and other animals including the role of the brain plays in regulating a range of behaviors.

Learning Objectives: After completing this course, students will have a clear understanding of how neurons function and how they control a variety of perceptions and behaviors.

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Laboratory Director: Michael Moore; moore@college.usc.edu
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Blackboard:
https://blackboard.usc.edu

Textbooks (recommended, not required):
(MM): *The Mind's Machine* by Watson and Breedlove, 2nd edition.
Publisher: Sinauer. ISBN: 9780878939336.
(SP): *Sensation and Perception* by Wolfe *et. al.*, 5th edition.
Publisher: Sinauer ISBN: 9781605352114

Lectures: Lectures will be recorded and streamed live via Zoom on MWF 12:00-12:50 PDT and then made available on Blackboard the same day.

PowerPoint slides of the lectures will be posted to Blackboard in advance of each class meeting. The contents of these slides will be drawn largely from the textbook readings but may also contain information from other sources. A successful learning strategy is to read over the lecture notes before class so that class time can be efficiently spent learning the material in greater depth.

Grading (there is no "extra credit" so please, don't ask):

Lecture Exam 1 (Friday, September 4)	100 points
Lecture Exam 2 (Wednesday, September 30)	100 points
Lecture Exam 3 (Friday, October 23)	100 points
Final Exam (Friday, November 20, 11AM-1PM)	100 points
Laboratory (see lab schedule below for point breakdown)	100 points
Total	500 points

Lecture Exams:

There will be four in-class exams that may consist of a mix of multiple choice, true/false, and matching type questions. Exams will cover information given in lectures only; laboratory performance will be covered separately in the labs (see below). The final exam is not cumulative and will only cover material since the third exam. Exams will be given synchronously via Blackboard (at the same time as the lectures). During the exams you'll need to join the Zoom meeting with video and audio enabled.

Pass/No Pass Policy:

Students taking this course with the Pass/No Pass option must have a final score equivalent to "C minus" or better to receive a "Pass." "No Pass" will be assigned for final scores less than the equivalent of a "C minus."

Re-Grading of Exams:

If you wish to have one or more exam questions re-graded you must submit a *written* request within one week of when your exam was returned to you. The entire answer will be re-graded, not just the part you think deserves more credit. Your score may go up or down as a result of a re-grade.

Missed Exams:

No make-up exams will be given. Students who are unable to take an exam at the scheduled time must give written notification as soon as possible, preferably in advance. Students who miss an exam, assignment, quiz, etc. for a legitimate reason (either a medical issue or a University-sanctioned event) must provide written documentation of said reason within seven days of the exam or assignment due date. Documentation must be sent to Dr. Moore. If documentation is not received within seven days the score for the missed assignment will be a zero. Upon receipt of valid documentation, the score for the missing assignment will be prorated. In other words, the score for the missed assignment will be the average of the score for the other like assignments. (For example, if exam 2 is missed, that score will become the average of exams 1, 3, and 4). Note that proration will only be done for one missed exam. This policy does not apply for the Final Exam which cannot be missed.

Final Grade Determination:

Grades will be assigned on a curve, based on the total number of points earned in the course. After each exam a curve will be given by the instructors to indicate roughly what letter grade corresponds to students' current number of points. Specifically, you will be provided with the current course average and a provisional letter grade scale. Please remember that the course mean provided on Blackboard is provisional as it is based on the number of points possible at that point in the course. Only the total number of points earned by the end of the semester will determine course grades.

Lecture #	Date	Topic	Reading
1	Aug. 17	Evolution of the Brain	MM: Chapter 1
2	Aug. 19	Structure and Organization of Nervous Systems I	MM: Chapter 3 SP: Chapter 1
3	Aug. 21	Structure and Organization of Nervous Systems I	MM: Chapter 3 SP: Chapter 1
4	Aug. 24	Cells of the Nervous System	MM: Chapters 2 & 13 SP: Chapter 1
5	Aug. 26	Nervous System Development	MM: Chapters 2 & 13 SP: Chapter 1
6	Aug. 28	Electrical Properties of Neurons I	MM: Chapter 3 SP: Chapter 1
7	Aug. 31	Electrical Properties of Neurons II	MM: Chapter 3 SP: Chapter 1
	Sept. 2	Review for Exam 1	
	Sept. 4	**EXAM 1**	
	Sept. 7	*Labor Day*	
8	Sept. 9	Propagation of Nerve Impulses	MM: Chapter 3 SP: Chapter 1
9	Sept. 11	Synaptic Transmission	MM: Chapter 4
10	Sept. 14	Synaptic Summation and Integration	MM: Chapter 4
11	Sept. 16	Introduction to Sensory Systems	MM: Chapter 5 SP: Chapter 13
12	Sept. 18	Touch Perception and Motor Systems	MM: Chapter 5 SP: Chapter 13
13	Sept. 21	Sound and Hearing	MM: Chapter 5 SP: Chapters 9 & 10
14	Sept. 23	Vestibular System	MM: Chapter 5 SP: Chapter 12
15	Sept. 25	Taste and Smell Sensation	MM: Chapter 5 SP: Chapters 14 & 15
	Sept. 28	Review for Exam 2	
	Sept 30	**Exam 2**	
16	Oct. 2	The Eye and Optics	MM: Chapter 7 SP: Chapter 5
17	Oct. 5	The Retina	MM: Chapter 7 SP: Chapter 5
18	Oct. 7	Visual Processing	MM: Chapter 7 SP: Chapter 5
19	Oct. 9	Color Vision	SP: Chapter 5
20	Oct. 11	Perception of Objects	MM: Chapter 4
21	Oct. 14	Binocular Vision	MM: Chapter 6

22	Oct. 16	Attention	MM: Chapter 14 SP: Chapter 7
23	Oct. 19	Scene and Motion Perception	SP: Chapter 8
	Oct. 21	Review for Exam 3	
	Oct. 23	**Exam 3**	
24	Oct. 2	Learning and Memory I	MM: Chapter 13
25	Oct. 28	Learning and Memory II	MM: Chapter 13
26	Oct. 30	Biological Rhythms	MM: Chapter 10
27	Nov. 2	Sleep	MM: Chapter 10
28	Nov. 4	Language I	MM: Chapter 8
29	Nov. 6	Language II	MM: Chapter 12
30	Nov. 9	Left Brain, Right Brain	MM: Chapter 15
31	Nov. 11	TBA	
	Nov. 13	Review for Final Exam	
	Friday, November 20, 11AM-1PM	**Final Exam**	

Please note the following important dates:

Friday, September 4 is the last day to change from a letter grade to Pass/No Pass option.
Friday, September 4 is the last day to drop without a "W" and receive a refund.
Friday, October 2 is the last day to change from Pass/No Pass option to a letter grade.
Friday, October 2 is the last day to drop without a "W" on transcript (no refund).
Friday, November 6 is the last day to drop with a "W".

Academic conduct, students with disabilities:

Any student requesting academic accommodations based on a disability is required to register with the Office of Disability Services and Programs (DSP, STU 301, 213-740-0776) each semester. You must deliver an approved DSP letter to Dr. Moore early in the semester as possible. Please see SCampus (http://www.usc.edu/dept/publications/SCAMPUS/) for additional policies that are not covered here (i.e. academic integrity, proper conduct, etc.) but that do still apply.

Laboratory portion of course:

Lab exercises will consist of performing simulations in Labster. A link to each week's simulation will be made available on Monday beginning at noon and can be done anytime during the week until Friday at 11:59 PM. Grading will be determined by answers given to the questions posed in the simulations. Simulations can be run as many times as desired and the best point total for all the attempts will be assigned for that lab.

Labster can be used on laptop or desktop-based computers, which meet standard requirements. All popular browsers are supported but Google Chrome and Mozilla Firefox work the best. Labster simulations are typically only 30MB or less in size, however, internet/Wifi

speed may affect the time it takes to load a simulation. Typically it only takes 1-5 minutes to load the entire simulation. Try not to have multiple browser windows open while you are doing the simulation. If you need help please contact the Labster Help Center at https://help.labster.com/en/.

Week of	**Laboratory Exercise**	**Points**
Aug 17th	No Lab	-
Aug 24th	Lab Safety	9
Aug 31st	Experimental Design	9
Sept 7th	No Lab	-
Sept 14th	Cell Membrane and Transport	9
Sept 21st	Electrical Resistance	9
Sept 28th	Action Potentials	10
Oct 5th	Sensory Transduction	9
Oct 12th	Electromagnetic Spectrum	9
Oct 19th	Muscle Tissues	9
Oct 26th	Skeletal Muscle	9
Nov 2nd	Smooth Muscle	9
Nov 9th	Parkinson's Disease	9