

Brain-Behavior Connection (PSY 221M)

Fall, 2006 MWF 10:00 – 10:50 Bush 207

Dr. Steven St. John, Bush 131 sstjohn@rollins.edu x1153
Office hours by appointment

Text: Discovering Biological Psychology by Laura Freeberg
Additional readings provided on Blackboard

Overview and Course Objectives

The Brain-Behavior Connection is an introductory course to the fields of neuroscience and physiological psychology. It is intended to be less intensive than, but contextually similar to, my physiological psychology course. In order to distinguish this course from that one, we will focus on somewhat different topics. In particular, we will focus in this course on the relationship of brain to psychological topics that are particular (or more germane) to humans: drug abuse, language, psychological disorders, dreams, and consciousness. Physiological psychology will concentrate on more general themes including sensory systems and homeostasis.

Additionally, though, we will cover basic principles of neuroscience, including what neurons are and how they function.

Assessment

You will be assessed based on 3 exams, 2 quizzes, and 1 book report. Exams will be a mix of question types and will be based on my lectures, outside papers, and textbook material not necessarily covered in class. For the book report, you will read one book and type a 6-8 page report. Books should be chosen from my list, though I will consider approving other books as well. In general, the books are written for the layman by neuroscientists or neuropsychologists and will cover some of the topics we will study in class. Guidelines and a list of approved titles can be found on the "Assignments" link on the course Blackboard website. Reading quizzes will be unannounced but given at the beginning of two classes during which we have an assigned reading from outside the textbook.

Grading

The components of your grade count as follows:

Best and second best exam:	25%
Poorest exam:	15%
Book report:	25%
Reading quizzes	2 x 5%

The grading scale will be determined at the end of the semester. The A, B, C, and D range will be the typical 90-100, 80-90 scale, but may be curved depending on overall performance.

Make-up Policy

I'm pretty reasonable. My expectation is that you're in this class because you want to learn the material. I also presume I am teaching adults. If you anticipate needing to miss an exam date or a deadline, or if you had an emergency that necessitated missing a date, you may request a make-up exam or a waiver of point deduction for a missed deadline. Such requests should be timely, and must be submitted in writing. I will not entertain face-to-face or phone requests. Written requests should be submitted as a formal memo (can be attached to an email) and should contain all of the information I would need to evaluate your request.

Schedule

Readings assigned come from the Freeberg text. If you see this symbol: 📖, there is also an additional reading for the class that can be found on the course webpage. The list of additional readings is also found in the syllabus. All readings should be done before class.

	DATE		TOPIC	READING
AUG	21	M	Is this really a psychology class?	Ch 1, 2-7
	23	W	The central nervous system	Ch 2, 28-49
	25	F	Cortical maps? Penfield and Ramachandran	Ch. 7, 209-11 📖 [1]
	28	M	The peripheral nervous system	Ch 2, 49-55
	30	W	Neurons and the resting potential	Ch 3, 58-73
SEP	1	F	The action potential	Ch 3, 73-7
	6	W	Synapses	Ch 3, 77-88
	8	F	Are we stuck with our synapses?	📖 [2]
	11	M	Neurotransmitter systems	Ch 4, 90-100
	13	W	Drug use and abuse	Ch 4, 100-18
	15	F	This is your brain on drugs	📖 [3]
	18	M	Nature and nurture: there's no debate (or shouldn't be)	Ch 5, 120-47
	20	W	Sexual development, hormones, and sexual behavior	Ch 10, 284-305
	22	F	Where is love in the brain – and is this as stupid as it sounds?	Ch 10, 305-9, 📖 [4]
	25	M	EXAM 1	
	27	W	Learning in Aplysia: synaptic explanations	Ch 12, 342-49
	29	F	Debates about memory: localized or distributed?	Ch 12, 349-60
OCT	2	M	Multiple memory systems	Ch 12, 360-72
	4	W	Sleep and dreams	Ch 11, 320-35
	6	F	Sleep: what good is it?	📖 [5]
	11	W	Myth or fact: "Right-brained" people are creative?	Ch 13, 276-86
	13	F	Language	Ch 13, 387-400, 📖 [6]
	16	M	Emotions	Ch 14, 404-15
	18	W	Brain mechanisms of emotion	Ch 14, 415-28
	20	F	Would Mr. Spock really be so competent?	📖 [7]
	23	M	EXAM 2	
	25	W	Reflexes and muscles	Ch 8, 224-37
	27	F	Motor systems and motor cortex	
	30	M	Central control	Ch 8, 237-44
NOV	1	W	Movement disorders	Ch 8, 244-51

	3	F	Will the paralyzed walk again?	☞ [8]
	6	M	Schizophrenia	Ch 16, 456-66
	8	W	Mood disorders	Ch 16, 466-77
	10	F	Studying consciousness	☞ [9]
	13	M	Profound study #1: the three-eyed frog	☞ [10]
	15	W	Profound study #2: seeing stripes	☞ [11]
	17	F	Profound study #3: how to make your brain bigger	☞ [12]
	20	M	Profound study #4: goggle reversal	☞ [13]
	27	M	Profound study #5: seeing with your tongue	☞ [14]
	29	W	Book roundtable; Book Report Due	
DEC	1	F	Final thoughts (and final exam thoughts!)	
	5	T	Final Exam; 8:00 – 10:00 am	

Additional Readings (☞)

1. Armel KC, Ramachandran VS: **Projecting sensations to external objects: evidence from skin conductance response.** *Proc.R.Soc.Lond B Biol.Sci* 2003, **270**:1499-1506.
2. Olson S. **The synapse revealed.** *HHMI Bulletin* 2004, 17, 14-23.
3. Staley JK, Mash DC: **Adaptive increase in D3 dopamine receptors in the brain reward circuits of human cocaine fatalities.** *J.Neurosci.* 1996, **16**:6100-6106.
4. Bartels A, Zeki S: **The neural basis of romantic love.** *Neuroreport* 2000, **11**:3829-3834.
5. Stickgold R, Hobson JA, Fosse R, Fosse M: **Sleep, Learning, and Dreams: Off-line Memory Reprocessing.** *Science* 2001, **294**:1052-1057.
6. Hickok G, Bellugi U, Klima ES: **Sign language in the brain.** *Sci.Am.* 2001, **284**:58-65.
7. Bechara A, Damasio H, Damasio AR, Lee GP: **Different contributions of the human amygdala and ventromedial prefrontal cortex to decision-making.** *J.Neurosci.* 1999, **19**:5473-5481.
8. Craelius W: **The bionic man: restoring mobility.** *Science* 2002, **295**:1018-1021.
9. Crick F, Koch C: **The problem of consciousness.** *Sci.Am.* 1992, **267**:152-159.
10. Constantine-Paton M, Law MI: **Eye-specific termination bands in tecta of three-eyed frogs.** *Science* 1978, **202**:639-641.
11. Blakemore C, Cooper GF: **Development of the brain depends on the visual environment.** *Nature* 1970, **228**:477-478.
12. Rosenzweig MR: **Environmental complexity, cerebral change, and behavior.** *American Psychologist* 1966, **21**:321-332.
13. Sugita Y: **Global plasticity in adult visual cortex following reversal of visual input.** *Nature* 1996, **380**:523-526.
14. Rita P, Tyler ME, Kaczmarek KA: **Seeing with the brain.** *International Journal of Human-Computer Interaction* 2003, **15**:285-295.