

Behavioral Neuroscience Spring 2011

Course summary: The goal of the course is to use an integrative and comparative approach to gain an in-depth understanding of selected topics in behavioral neuroscience of vertebrates. We will cover the basics of neurons and brains, sensory and motor systems, plasticity, cognition, and disorders of the nervous system. This is an advanced course that requires substantial reading assignments from the text, literature reviews, and primary literature.

Preparation for course: A strong background in molecular and cellular biology is required.

Required prerequisite: Biol 205.

Recommended: Biol 202; Biol 278.

Meeting time: T/Th, 9:30-10:45.

Meeting Place: 107 Wilson.

Instructor: Dr. Sabrina S. Burmeister

Office hours: T/Th, 10:45-11:30

Office location: 231 Wilson

TA: Nicholas Garcia

Office hours: Fri, 3:00-4:00

Office location: 228 Wilson

How to communicate with Dr. Burmeister: Face-to-face communication is the most effective. You should use class time and office hours to ask me questions about course logistics, course content, etc. Please do not send me email to ask these types of questions and do not send me email to tell me that you are going to miss class, etc.

Required Readings:

Textbook: Biological Psychology by Breedlove et al. (4th, 5th, or 6th edition)

Supplementary readings, available on Blackboard:

1. Arnold (2009) The organizational-activational hypothesis as the foundation for a unified theory of sexual differentiation of all mammalian tissues. *Hormones and Behavior* 55:570.
2. Insel (2001) The neurobiology of attachment. *Nature Reviews Neuroscience* 2:129.
3. Swain (2007) Brain basis of early parent-infant interactions: psychology, physiology, and in vivo functional neuroimaging studies. *Journal of Child Psychology and Psychiatry* 48:262.
4. Nelson (2007) Neural mechanisms of aggression. *Nature Reviews Neuroscience* 8:536.
5. Squire (2009) The legacy of patient H.M. for neuroscience. *Neuron* 61:6.
6. Nottebohm (2005) The neural basis of bird song. *Public Library of Science Biology* 3(5):e164.
7. Geshwind (2009) Advances in autism. *Annual Review of Medicine* 60:367.

Grading: Semester grades will be based on the following:

Percent of semester grade

Midterm 1	30%
Midterm 2	30%
Final Exam (cumulative)	40%

Make-up midterm exams: A make-up exam will be offered to students who miss the midterm exam due to medically verified illnesses or University authorized absences. For authorized absences, you must notify me at least one week in advance to reschedule the exam. For medically verified illnesses, you must provide documentation from Student Health Services stating that you were ill **prior to** the exam, and you must notify me of your illness within 24 hours of the exam. Make-up midterm exams will consist of essay questions.

For the final exam, a make-up will only be given if an official "Examination Excuse" is granted by the Dean's office (see Undergraduate Bulletin).

Grading policy: Exams and grades will be based on the definitions of permanent grades provided in the UNC Undergraduate Bulletin. Briefly, an "A" represents mastery of the content at the highest level of attainment; "B" represents strong performance; "C" represents totally acceptable performance; "D" represents marginal performance; and "F" represents unacceptable performance.

If at any point you feel you were not evaluated fairly, you must submit a written description of your concern to me within 1 week of receiving the notice of the grade; submitting a concern by email is not acceptable. You must explain why you believe you deserve a different grade than the one you initially received. Concerns expressed after the 1-week deadline will not be considered.

Course Schedule

Lecture	Topic	Reading Assignment
11-Jan T	Introduction to course	Ch 1
13-Jan Th	Neuroanatomy	Ch 2
18-Jan T	Brain evolution	Ch 6
20-Jan Th	Action potentials	Ch 3
25-Jan T	Synapses	Ch 3
27-Jan Th	Neurotransmitters	Ch 4
1-Feb T	Hormones	Ch 5
3-Feb Th	Hormones	Ch 5
8-Feb T	Somatosensory system	Ch 8
10-Feb Th	Chemosenses	Ch 9
15-Feb T	Midterm 1 (material through 8-Feb)	--
17-Feb Th	Hearing	Ch 9
22-Feb T	Vision	Ch 10
24-Feb Th	Midterm 1 in-class discussion	--
1-Mar T	Vision	Ch 10
3-Mar Th	Motor Systems	Ch 11
	-- Spring Break --	
15-Mar T	Sexual differentiation	Ch 12; Arnold (2009)
17-Mar Th	Sexual behavior	Ch 12
22-Mar T	Pair bonding	Insel (2001)
24-Mar Th	Parental behavior	Swain (2007)
29-Mar T	Midterm 2 (material 10-Feb through 22-Mar)	--
31-Mar Th	Aggression	Ch 15; Nelson (2007)
5-Apr T	Memory	Ch 17; Squire (2009)
7-Apr Th	Midterm 2 in-class discussion	--
12-Apr T	Memory & Neural plasticity	Ch 17
14-Apr Th	Neural plasticity	Ch 17
19-Apr T	Vocal learning	Ch 19; Nottebohm (2005)
21-Apr Th	Cognition	Ch 18
26-Apr T	Autism & Schizophrenia	Geshwind (2009)
3-May	Final Exam at 8:00 am (material 11-Jan through 26-Apr)	--