

PY/NS 330: COGNITIVE NEUROSCIENCE
Fall 2006
Tuesday/Thursday, 8:00-9:20 am
Room 329 Pettengill

Instructor: Nancy S. Koven, Ph.D.
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Office: 365 Pettengill
Drop-In Office Hours: Wednesdays 10:00 am – 12:00 pm, 1:00 pm-3:00 pm
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Readings

Banich, M. T. (2004). *Cognitive neuroscience and neuropsychology*, 2nd ed. Boston: Houghton Mifflin Company.

The above text is required for this course and is available at the campus bookstore or through on-line book vendors. Supplementary readings may be assigned as the semester progresses and will be made available on the WebCT course page.

Course Description

This course explores how the neurological organization of the brain influences the way people think, feel, and act. Particular emphasis is given to the brain systems that support motor control, object recognition, spatial processing, attention, language, memory, executive functions, and emotion. We will also investigate impairments and unusual phenomena that will include alien limb syndrome, agnosias, hemineglect, phantom limb, aphasias, Korsakoff's amnesia, environmental dependency syndrome, and Klüver-Bucy syndrome.

Special Considerations: Students with Disabilities

If you have a condition or disability that causes difficulty with learning in the classroom, completing assignments as described, or taking examinations, please see me as soon as possible. Documentation from a physician or other clinician will be needed before accommodations can be made. I, in collaboration with staff in the office of the Dean of Students, will do whatever I can to accommodate your needs.

Classroom Environment

It is essential that our classroom be a place in which people feel comfortable expressing their thoughts, feelings, and opinions without fear of unduly critical or judgmental responses, especially during classroom discussions. I expect all students to be respectful of the widely varied experiences and backgrounds represented by the classroom members as a group. Disrespect or discrimination on any basis will not be tolerated.

Academic Honesty

Cheating on exams will not be tolerated. If anyone is caught cheating, I will take the appropriate action. Any semblance of cheating will result in a formal accusation of cheating, so please avoid all

behaviors that might be considered, by a reasonable judge, as cheating. If you are having problems in class that you feel at risk of cheating, please make arrangements to see me after class, during office hours, or by appointment. Plagiarism involves the representation of someone else's work as your own. Plagiarism is as serious an offense as cheating. Please familiarize yourself with the College's policy on academic dishonesty at:

<http://abacus.bates.edu/pubs/Plagiarism/plagiarism.html#0>

GRADING COMPONENTS

In-Class Exams

There will be 3 in-class exams throughout the semester, each worth 100 points, to assess your grasp of textbook and lecture material. The format of each exam will be a combination of multiple choice questions and short essays. Exams will be proctored, and you must bring a #2 pencil to each exam. The second and third exams will not be cumulative. In other words, the second exam will only cover material that follows the first exam. The third exam will only cover material that follows the second exam. The final exam, as described below, does not pertain to textbook or lecture material.

Make-up exams will be given only when you have documentation (i.e., a dated and signed note from the Dean of Students) to substantiate your absence from class. Make-up exams may be in the form of short or long essays, at my discretion.

In-Class Presentation

Each student will be expected to participate in 1 in-class presentation during the semester in which the student will summarize the theories and mechanics of a particular neuroscience technique and present a recent scientific article in which the technique was used to assess human brain functioning in normal or abnormal human samples. As the field of cognitive neuroscience is rapidly expanding, the goal of these presentations is to introduce you to a wide range of current cognitive neuroscience techniques such that you may approach the scientific literature in future psychology and neuroscience courses with greater ability to understand and critique applications of these techniques. Techniques covered will include: optical imaging, functional magnetic resonance imaging (fMRI), diffusion tensor imaging (DTI), startle blink electromyographic (EMG) response, positron emission tomography (PET), event-related potentials (ERP), Wada procedure, single unit recording, single photon emission computed tomography (SPECT), neuropsychological assessment, genetic analysis of brain function, and magnetoencephalography (MEG). Applications of such techniques may involve readings in literature related to autism, schizophrenia, traumatic brain injury (TBI), multiple sclerosis (MS), brain tumor, epilepsy, bipolar disorder, Alzheimer's disease and mild cognitive impairment (MCI), substance abuse, stroke, and other conditions.

Presentations are expected to last approximately 20 minutes, with a few minutes at the end of the presentation to answer questions from the class. Presentations are expected to be in PowerPoint format such that slides may be easily loaded onto the course's WebCT page for future reference. Depending on the number of students enrolled in the course, students may be paired off to share the responsibilities of the presentation. Students working in pairs on a presentation would receive the same grade for the presentation.

Final Exam

Material relating to cognitive neuroscience techniques and their common applications, as covered across student presentations, will be fodder for the final exam. The final exam will be held on Friday 12/15/06 at 1:15 pm and will consist of multiple choice questions and short essays. Via the

WebCT course page, students will have access to PowerPoint slides from each presentation in order to study for the final exam.

Writing Assignment

There is 1 writing assignment associated with this course. In this assignment, the student is asked to write a 5 page case vignette of a fictitious patient, taking the viewpoint of a practicing neurologist. In this vignette, the student will review the presenting symptoms, relevant demographic/clinical history, and neurological and other neuroscientific tests undertaken to determine differential diagnosis and then discuss how this information converges to provide evidence of specific brain dysfunction and cognitive impairment. The writing assignment is designed to promote integration of material from the textbook, lectures, and in-class presentations. An illustrative example will be provided to you early in the semester. Although the writing assignment is due at the beginning of class on 11/28/06, students may hand in their papers anytime prior to this date. Students are encouraged to use resources of the college's Writing Workshop in preparation of their paper. Information about the Writing Workshop is available at: <http://www.bates.edu/x50990.xml>.

Grading

There will be a maximum of 500 points for this course:

In-Class Exams	3 x 100 pts → 300 pts → 60% of total grade
Final Exam	1 x 80 pts → 80 pts → 16% of total grade
In-Class Presentation	1 x 60 pts → 60 pts → 12% of total grade
Writing Assignment	1 x 60 pts → 60 pts → 12% of total grade

The final letter grade will be based on the number of points you have earned on the exams and presentation, divided by the total points possible for the course.

# of points	% range	Grade
465-500	93-100	A
450-464	90-92.99	A-
435-449	87-89.99	B+
415-434	83-86.99	B
400-414	80-82.99	B-
385-399	77-79.99	C+
365-384	73-76.99	C
350-364	70-72.99	C-
335-349	67-69.99	D+
315-334	63-66.99	D
300-314	60-62.99	D-
< 300	< 60	F

Course Calendar

You are expected to read the assigned material *before* the day on which it is listed. As you read, try to think about some of the issues that are raised, and any questions that come up for you. This will help you in the class discussion and allow you to gain more from the lectures. The chapters refer to the Banich text. Any other assigned readings will be posted on our WebCT page as the semester progresses.

Course Calendar

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
9/7/06	Course Overview/Neuronal Communication	-----
9/12/06	Neuronal Communication	Ch. 2
9/14/06	Hemispheric Specialization	Ch. 4
9/19/06	Hemispheric Specialization	Ch. 4
9/21/06	Motor Control	Ch. 5
9/26/06	Motor Control	Ch. 5
9/28/06	Object Recognition	Ch. 6
10/3/06	Object Recognition	Ch. 6
10/5/06	EXAM #1	-----
10/10/06	Spatial Processing	Ch. 7
10/12/06	Spatial Processing	Ch. 7
10/17/06	Attention	Ch. 8
10/19/06	NO CLASS: Fall Recess	-----
10/24/06	Attention	Ch. 8
10/26/06	Language	Ch. 9
10/31/06	Language	Ch. 9
11/2/06	EXAM #2	-----
11/7/06	Memory	Ch. 10
11/9/06	Memory	Ch. 10
11/14/06	Executive Functions	Ch. 11
11/16/06	Executive Functions	Ch. 11
11/21/06	NO CLASS: Thanksgiving Break	-----
11/23/06	NO CLASS: Thanksgiving Break	-----
11/28/06	Plasticity*	Ch. 13
11/30/06	Generalized Cognitive Disorders	Ch. 14
12/5/06	Generalized Cognitive Disorders	Ch. 14
12/7/06	EXAM #3	-----
12/15/06	FINAL EXAM (1:15 pm)	-----

* Writing assignment is due, with expectation of receiving a hard copy of your paper at the beginning of class on this day.