**W3480y: FUNDAMENTALS OF COGNITIVE NEUROPSYCHOLOGY**
**Semester**: SPRING 2006
**Meeting Time**: TUESDAYS, 10:10am-12noon
**Course Prerequisites**: W1010 or W2450 and instructor's permission.

**Instructor**: Jennifer A. Mangels
**Office Hours**: THURSDAY, 2-4 PM, rm. 316, or by appointment (x4-7560)

**Course description:** The field of cognitive neuropsychology serves as an interface between cognitive psychology (the study of information processing) and neuroscience (the study of the physical brain). In this course, we will sample topics in cognitive and affective psychology (e.g., visual perception, attention, executive function, memory, motor control, emotion control, language, varieties of consciousness), and address: (a) how available cognitive theories have shaped the investigation of cognitive disorders in brain damaged patients, and (b) how the resulting neurological data has shaped (or reshaped) cognitive theory. Although the focus of this course will be on findings from studies of cognitive disorders in patients with localized brain damage, developmental disorders such as autism, Williams' syndrome and dyslexia will also be discussed from a cognitive and clinical perspective. Finally, because the best understanding of any cognitive process or clinical disorder comes from approaching the issue from multiple perspectives, we will also seek converging evidence from complementary techniques that allow examination mind-brain relationships in normal individuals, including functional neuroimaging (e.g., PET, fMRI) and neuromonitoring (e.g., ERP).

**Methods of Instruction:**

The seminar will focus on critical reading and discussion of both foundational and cutting-edge research on the topics described in the syllabus. All students will be expected to have read the assigned readings thoroughly before class so as to participate actively in discussion. In addition, each student will be assigned the role of discussion leader for a particular topic.

**Readings:**

Readings will consist of review articles, empirical articles and chapters from the following text:

> *The Handbook of Cognitive Neuropsychology: What Deficits Reveal About the Human Mind* (2001). Edited by Brenda Rapp. Psychology Press: Philadelphia. [Books can be ordered from www.amazon.com (paperbacks are about $45), and serve as a useful reference for the field.]

**Readings and the "guide question" for each Tuesday will be posted each week by the previous Thursday morning (9 a.m.).**

**Methods of Evaluation**

**Grading:** Grades will be based on the following three factors:

- **Written assignments (40%)**
- **Class presentation (40%)**
- **Class participation (20%)**

(1) ***Written assignments (40%).*** *At the end of each "section", a written assignment is due by 5pm Friday (1/27, 2/10, 3/3/, 3/24, 4/14/, 4/28).* This assignment involves writing a 1-2 page response to the question that is linked to each of the topics associated with that section (12 pt type, with reasonable margins!). These questions will actually be provided to you at the time that the readings are assigned. They are provided at that time in order guide your reading and I strongly suggest you jot down notes pertaining to these questions as you go along. You also should be prepared to discuss your thoughts on these questions in the following class and you may even want to incorporate things discussed in class into your response. However, you need only prepare the full written answer to them in time to submit them on the assigned date.

*Your grade for each question will be based on how thoroughly and thoughtfully you answer that question.* However, writing style and readability count too. In other words, the information in the answer must be well organized and the writing should be as typo-free as possible (please proofread!). However, I stress that these assignments need only be based on the assigned readings and are not expected to be research papers. These questions primarily are designed to help you synthesize the material and stimulate critical thinking.

***Assignment FAQ****: Assignments should be dropped in my file on Courseworks no later than 5pm on the assigned date. Late assignments will not be accepted. You can drop your three lowest response grades and you do not have to submit a response for the week that you are presenting.*

(2) ***Class presentation (40%).*** All class members are responsible for acting as discussion facilitator for one topic during the semester. You will present in teams of 2. At the start of the second class, you will choose your topic and partner at random by picking it out of a hat.

Typically, presentations will take the form of a brief review of the main issues from the assigned readings (30-45 minutes) integrated with critical questions for open discussion that will constitute the remainder of the class time. The questions your classmates post can be used to guide your presentation and can be openers for the discussions that you start. Note that supplementing this presentation with less conventional approaches to the material (e.g., debates, demonstrations, and videos) is strongly encouraged – these are things that we will talk about in our scheduled meetings.

*You are required to meet with me* ***twice*** *regarding your presentation.*

a) *The first meeting will take place between Thursday and Monday two weeks prior your Tuesday presentation. You should come to the meeting prepared with 3 things*. (1) You should have read the assigned readings for your topic, so that we can discuss them. (2) You should have done some library research to identify additional related articles that you might read to supplement your presentation. (3) You should submit a question that I will post with the assigned readings for the class. During our meeting I will discuss the readings with you, and help you to refine your reading list and assignment question.

b) *The second meeting will take place between Thursday and Monday the week before your Tuesday presentation.* During this meeting, we will discuss the organizational plan for your presentation and I can provide you with whatever supplementary materials that might be appropriate. The earlier and more prepared you are for this meeting, the more constructive the help that I can give you.

*(3)* ***Class participation (20%).***

a) *Each week submit at least 1, but no more than 3 "questions" of your own about that topic to the discussion board on Courseworks*. This question should not simply request clarification of a detail from one of the papers (e.g., What does the graph on page 4 mean?), although these types of questions are welcome during class time. Rather, your submitted question should demonstrate a deeper understanding of the strengths and weakness of the research in the assigned readings and consider possibilities for extensions and future research (e.g., Could the memory deficit demonstrated by patient MR be accounted for by a deficit in attention?). Particularly good questions are those that could be the basis for a research project.

**Questions are due no later than 12 noon on Monday**. That gives the discussion leader for that week a chance to look over the questions and potentially incorporate them into his/her presentation.

As with the written assignment, you do not need to write a question for the week you are presenting, and I will only hold you responsible for turning in questions for 13 of the sessions (meaning that you can completely skip 1 week somewhere during the semester; after that additional failure to turn in a question will result in decrement to your class participation grade).

b) *Everyone is expected to come to class prepared to discuss the assigned articles and to contribute to the group learning process (that's what makes courses like this fun, if you are expecting a lecture to listen to passively each week, this is not the best class for you)*. The questions for critical thinking that I provide and the questions you and your classmates write out beforehand are designed to help you prepare for this aspect of the class. Although most presentations will start out as somewhat lecture-like, they are mainly designed to be a set-up of the main topics and identification of critical issues that require clarification and development by the group as whole. This does not mean that you always have to be saying something but, at the very least, I expect you to attend all classes, stay attentive and mindful for their entirety, attempt to answer some questions I pose and occasionally pose some of your own.

**HELPFUL WEB LINKS FOR IMPROVING/REFRESHING YOUR NEUROANATOMY:**
http://www9.biostr.washington.edu:80/cgi-bin/DA/PageMaster?atlas:Neuroanatomy+ffpathIndex/Splash^Page+2 **(general anatomy)**

http://faculty.washington.edu/chudler/gloss.html
**(glossary of neuroscience terms and links to glossaries of related terms)**

http://www.neuroguide.com/
**(search engine specifically targeting neuroscience links)**

http://www.ncbi.nlm.nih.gov/pubmed/
**(quick and easy way to search for neuropsychology and neuroscience references)**

**SEMINAR IN COGNITIVE NEUROPSYCHOLOGY: W3480Y (Spring 2006)**
**SCHEDULE OF TOPICS**

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***Introduction***

## *Week 1 (1/17): Introduction to the course and cognitive neuropsychology*

**Week 2 (1/24):** **Foundations and future of cognitive neuropsychology:** assumptions & methods

**1/27 --> Written Assignment #1 Due (by 5pm)**

***Attention and Cognitive Control***

**Week 3 (1/31):** **Orienting to and interacting with objects in space** (hemineglect; Williams syndrome)

**Week 4 (2/7):** **Goal-directed control of attention** (dorsolateral prefrontal cortex and anterior cingulate)

**2/10 --> Written Assignment #2 Due (by 5pm)**

***Memory***

**Week 5 (2/14):** **Organization of object knowledge (semantic memory)** (agnosia)

Week 6 (2/21): Encoding information in episodic memory **(anterograde amnesia)**

**Week 7 (2/28):** **Consolidation and retrieval from remote memory** (isolated retrograde amnesia)

**3/3 --> Written Assignment #3 Due (by 5pm)**

***Lexical Access OR Non-language processes***

**Week 8 (3/7):** **Translating print to meaning** (deficits in word reading, dyslexia)
**OR Hearing and "speaking" the music (**amusia, aprosodia; musical savants)

Week 9 (3/14): SPRING BREAK

**Week 10 (3/21):** **Control over two languages at once** (aphasia in bilinguals)
**OR Number recognition and calculation** (acalculia; mathematical prodigies)

**3/24 --> Written Assignment #4 Due (by 5pm)**

***Emotions and Social Behaviors***

**Week 11 (3/28):** **Why do we feel the way that we do?** (Urbach-Wieth, striatal or orbitofrontal damage)

**Week 13 (4/4):** **Self vs. other: empathy and theory of mind** (medial frontal damage; autism)

**Week 12 (4/11):** **The law of the brain: decision making and morality** (ventromedial prefrontal)

**4/14 --> Written Assignment #5 Due (by 5pm)**

***Consciousness***

**Week 14 (4/18):** **Hypo-Consciousness** (anosognosia, Capgras and Cotard syndromes)

**Week 15 (4/25):** **Hyper-Consciousness** (hallucinations and phantoms)

**4/28 --> Written Assignment #6 Due (by 5pm)**

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