

# Cognitive Neuropsychology

## PSY 768

### Spring 2009

**Time:** Thurs 4.30pm – 7.10pm  
**Room:** Archlab Conference Room  
**Instructor:** James Thompson  
Room 2056  
David King Hall  
email: [jthompz@gmu.edu](mailto:jthompz@gmu.edu)

**Office Hours:** Thurs 3.30pm – 4.30pm or by appointment (email only)

#### **Required Reading:**

Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth.

Additional readings will be distributed via the course website.

#### **Optional Additional Readings:**

Lezak MD, Howieson DB, & Loring DW (2004). *Neuropsychological Assessment 4<sup>th</sup> Ed.* Oxford University Press.

(This is a comprehensive text covering most neuropsychological tests used in common practice. It is a considerable investment but will be useful for anyone studying brain-behavior relationships in humans)

**Objectives:** Cognitive neuropsychology is the study of the relationship between brain and behavior, with a particular focus on evidence from patients with brain pathology. The goal of cognitive neuropsychology is to understand i) the effects of brain pathology within the context of modern theories of cognition; as well as ii) to draw conclusions about normal or intact cognitive function from patterns of dysfunction that arises from brain pathology. At the end of this course I hope you will have learned the following:

1. The broad anatomy of the human brain
2. The major causes of brain pathology encountered in neuropsychological settings
3. The basic structure of the different lobes of the brain, with particular relevance to function (cognitive, motor, emotion/personality)
4. The deficits associated with damage to each lobe
5. The role of neuropsychological tests in the assessment of functional change following damage

**Format:** Classes will consist of a combination of lectures, student presentations, class discussion, and demonstration of commonly used neuropsychological tests. Since much of the material covered in the course will be new to students, keeping up with background material will be critical. Prerequisites for the course are: basic (undergraduate-level) knowledge of cognitive psychology and neuroscience (or physiological psychology), or willingness to cover this ground through your own reading, and willingness to participate in class discussion.

**Assessment:** Assessment will consist of a take-home quiz (15%), case study presentation (20%), class participation (15%), and a final paper (50%).

Take-home Quiz: The take home quiz will consist of short answer items based on material covered in the first 4 classes.

Case Study: You will each be given a set of case descriptions and will need to present one of these cases to the class, including a description of the initial presentation of the patient, hypotheses of the clinician, a description of the testing process (including rationale), and conclusions of the clinician. Discuss the patterns of results in the context of theories of cognitive function, as well as the implications of the pattern of results for normal cognition.

Class Participation: You are expected to have read the readings before class and come to class prepared to discuss the topics covered.

Paper: The final paper will consist of a 3000 word essay based on topics covered in class and the broader cognitive neuropsychology literature. Essay topics will be distributed in class.

### **Important Dates**

Last day to add: Feb 3rd. Last day to drop Feb 20. Spring Break Mar 9-15.

### **Grades**

A (100-90); B (89-80); C (79-70); D (69-60); F (below 59)

**Attendance:** While you will not be graded on attendance, this is a graduate-level course and you are expected to attend each week.

### **Honor Code**

All exams must follow the guidelines of the GMU Honor Code. George Mason University has an Honor Code, which requires all members of this community to maintain the highest standards of academic honesty and integrity. Cheating, plagiarism, lying, and stealing are all prohibited. All violations of the Honor Code will be reported to the Honor Committee. See [honorcode.gmu.edu](http://honorcode.gmu.edu) for more detailed information. Students may consult with other students and use books, notes, and other sources in preparing for exams. However, when taking exams, no books, notes, or student interaction will be allowed. Cheating and plagiarism of any sort will not be tolerated

**Students with Disabilities:** If you are a student with a disability and you need academic

accommodations, please see me and contact the Disability Resource Center C(DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

## SCHEDULE

DATE	TOPICS & READINGS
Jan 22nd	<p><b>Introduction</b> Kolb, B. &amp; Wishaw, I.Q. (2009). <i>Fundamentals of Human Neuropsychology</i>, 6<sup>th</sup> Edition. Worth Publishing. Ch 1</p> <p>Ellis, A &amp; Young, A.W. (1988). What is cognitive neuropsychology. <i>Human cognitive neuropsychology</i>. Hove, UK: Lawrence Erlbaum.</p> <p>Caramazza, A. &amp; Coltheart, M (2006). Cognitive Neuropsychology twenty years on. <i>Cognitive Neuropsychology</i>, 23, 3-12.</p>
Jan 29th	<p><b>Organization of the Human Nervous System</b> Kolb, B. &amp; Wishaw, I.Q. (2009). <i>Fundamentals of Human Neuropsychology</i>, 6<sup>th</sup> Edition. Worth Publishing. Ch 3, 10</p>
Feb 5th	<p><b>Causes of brain pathology</b> Kolb, B. &amp; Wishaw, I.Q. (2009). <i>Fundamentals of Human Neuropsychology</i>, 6<sup>th</sup> Edition. Worth Publishing. Ch 26</p> <p>Lezak MD, Howieson DB, &amp; Loring DW (2004). <i>Neuropsychological Assessment 4<sup>th</sup> Ed</i>. Oxford University Press. Ch 7</p>
Feb 12th	<p><b>Cerebral Asymmetry</b> Kolb, B. &amp; Wishaw, I.Q. (2009). <i>Fundamentals of Human Neuropsychology</i>, 6<sup>th</sup> Edition. Worth Publishing. Ch 11, 12</p> <p>Gazzaniga, M. S., Ledoux, J. E., &amp; Wilson, D. H. (1977). Language, praxis, and the right hemisphere: Clues to some mechanisms of consciousness. <i>Neurology</i>, 27, 1144-1147.</p>
Feb 19th	<p><b>The occipital lobes</b> Kolb, B. &amp; Wishaw, I.Q. (2009). <i>Fundamentals of Human Neuropsychology</i>, 6<sup>th</sup> Edition. Worth Publishing. Ch 13</p> <p>Goodale, M.A., Meenan, J.P., Bulthoff, H.H., Nicolle, D.A., Murphy, K.J., Racicot, C.I. (1994). Separate neural pathways for the visual analysis of object shape in perception and prehension. <i>Current Biology</i>, 4:604-610.</p>

- Feb 26th      **The parietal lobes**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 14
- Driver, J. & Mattingley, J.B. (1998). Parietal neglect and visual awareness. *Nature Neuroscience*. 1, 17-22.
- Mar 5th      **The temporal lobes**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 15
- Vaina, L.M. & Gross, C.G. (2004). Perceptual deficits in patients with impaired recognition of biological motion after temporal lobe lesions. *Proceedings of the National Academy of Sciences*, 101, 16947-16951.
- Mar 19<sup>th</sup>      **The frontal lobes**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 16
- Mar 26th      **Special topic: Synesthesia**  
 T.B.A.
- Apr 2nd      **Special Topic: Intellectual Ability**  
 T.B.A.
- Apr 9th      **Learning & Memory**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 18
- Apr 16th      **Dementia**  
 Knopman, D. & Selnes, O. (2003). Neuropsychology of Dementia. In K. Heilman, E. Valenstein (eds), *Clinical Neuropsychology 4<sup>th</sup> Edition*. Oxford University Press. pp 574-616.
- Apr 23rd      **Recovery & Rehabilitation of Function**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 25
- April 30th      **Special Topic: Schizophrenia & Depression**  
 Kolb, B. & Wishaw, I.Q. (2009). *Fundamentals of Human Neuropsychology*, 6<sup>th</sup> Edition. Worth Publishing. Ch 27