



# Psychology 461 – Winter 2010

## Case Studies in Neuropsychology

**Class Time:** Fridays 9:30am – 12:20pm

**Location:** HH 373



**Instructor:** Dr. Myra Fernandes  
**Office Hours:** Mondays 11am-noon

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**Office:** PAS 4054

### *Required Course Text*

Ogden, J. A. (2005). *Fractured Minds: A Case-Study Approach to Clinical Neuropsychology 2nd Ed.* Oxford University Press, New York.

### *Course Description*

The single-case approach in neuropsychology has made a significant contribution to our understanding of the architecture of human cognition. Much of what we know about human behaviour has come from more than a century of observations of people with head injuries, brain diseases, or unusual pathologies. Studying such patients can provide insights into how the “mind” works, and shed light of the brain basis of cognitive processes such as attention, perception, personality, emotion, memory, decision making, and language capacity.

This Honours undergraduate seminar will first examine the basic methodological approach used in single case studies and the limitations of those approaches before moving on to a more detailed examination of particular cases. We will also study basic neuroanatomy, as it pertains to understanding effects of brain lesions, injuries, and abnormalities on cognitive functions. The goal of the course is to examine neuropsychological patient cases in order to understand how these have informed current models of human behaviour.

### *Course Structure and Requirements*

The first few classes will consist of formal lectures, and group activities, designed to introduce you to the basic anatomy of the brain, current methods of examining brain integrity, and common methods of assessing cognitive function. We will take a cognitive neuropsychological approach to studying and interpreting brain-behaviour relationships. Individual students will review and report case studies from neuropsychology, and the class will discuss their unique contributions to current models of cognitive function.

Students will also examine the relative contributions of studies of patients with head injury, disease, or brain disorders, and studies that use neuroimaging in non-injured individuals, to the field. It is my hope that throughout this course you will gain knowledge about brain organization and function, further develop your skills in thinking critically and integrating evidence, as well as refine your ability to present your thoughts and ideas in a concise and coherent manner (both orally and in writing).

## Overview of Evaluation

Thought papers (4 X 5%)		20%
Long presentation		30%
Short presentation	Friday March 19 <sup>th</sup>	15%
Term Test	Friday March 26 <sup>th</sup>	25%
Class Debate	Monday April 5 <sup>th</sup>	10%

## Details on each Evaluation

### Thought papers & Discussions

In preparation for select Long Presentations, you will be expected to write a 2-page Thought Paper, based on the assigned reading. You will 1) briefly describe the syndrome being discussed, 2) highlight neuropsychological tasks that can be used to assess its effects on cognition, and 3) outline how the syndrome has contributed to our understanding of the “normal” brain, and “normal” cognitive functioning. During each Presenters’ Discussion session, you will be expected to participate by providing some of your ideas from points 2 and 3. The presenters will lead the class discussion and you will be expected to participate in any in-class demonstrations. Each thought paper is worth 5%, and you need to complete 4 of these from a selection of Long Presentations of your choice (due on dates of selected Long Presentations; **4 X 5% = 20%**).

### Long Presentations

Presentations consist of two parts:

#### **Task A**

Read the relevant chapter/reading. Together with a class partner, you must prepare a 40-minute Power Point presentation (**each person presents for 20 minutes**). One of you will review the case described in the chapter, and the other will explain the methods used to assess functions. You must each highlight a main contribution of the patient to our understanding of human cognition. You will then each outline tests (clinical, or experimental cognitive) that are missing that could better describe the patient. You will then each choose one, similar, case reported in the literature (you must consult a recognized peer-reviewed journal for this), describe the case, and explain how it has uniquely contributed to the field, and summarize what we learned from this study. The presentation will be graded, individually, and is worth **20%**.

A copy of your Power Point presentation must be emailed to Dr. Fernandes **by 4pm on the day before your presentation**, so that it can be brought to class by the instructor and loaded on the computer prior to the beginning of class the next day.

#### **Task B**

Following your presentation, you and your partner will guide the class through a Panel Discussion for 10 minutes. During this time you must pose 2 Questions and/or carry out Demonstrations to highlight the cognitive function(s) affected in your case studies. Your classmates will attempt to answer the questions, and/or participate in the demonstration. Your job during the Panel Discussion is to guide students, bring up relevant information, and jump in with an opinion on the topic. You can bring in extra materials (newspaper clippings) or prepare demos related to your prepared Questions. These will help engage your classmates in the Panel Discussion. Your Questions/Answers, and ability to lead the Panel Discussion is worth **10% (graded individually)**.

### Short Presentations

You will prepare a 5-6 minute Power Point presentation. Pick any syndrome or case study, find a research article in which that affected behaviour has been examined using fMRI/EEG/ERP/TMS/PET in non-brain injured individuals; Present cognitive methods used, findings, and what additional information we have learned from neuroimaging, over and above what was learned from the patient studies. This presentation will be graded, and is worth **15%**. This is designed to give you a chance to investigate and discuss the behaviour/syndrome you are most interested in. A copy of your Power Point presentation must be emailed to Dr. Fernandes **by 4pm on Thurs. MARCH 18<sup>th</sup>, 2010**, so that it can be brought to class by the instructor and loaded on the computer prior to the beginning of class.

### Term Test

The test is worth **25% of your grade**, and will consist of multiple choice, short answer questions, and longer essay questions based on material covered in lectures, and in Long presentations and Discussions. You will have 2 hours to write the test, in class.

### Class Debate

We will be having a Class Debate on “Limitations of Case studies” and “What can we learn from a broken brain?” You will pick a side for this debate, and prepare a 1-2 page summary of your arguments (3-4 key points; bring to class to help argue your points in debate). This summary and your participation in the debate are worth **10%**. References for this debate will be posted on UWACE in pdf format.

### **Course Web page / What is UW-ACE?**

UW-ACE is a web-based course management system that enables instructors to manage course materials and interact easily and efficiently with their students. Here, **I will post lecture notes online**, along with the course syllabus. Course announcements, and answers to Frequently Asked Questions will also be posted on UW-ACE. UW-ACE will also be used to post marks to the grade-book, and track student progress.

### **Policy for late Thought papers**

*It is the student's responsibility to hand in late Thought papers directly to me, **in person**, or via **email**. These will be subject to a **late penalty of -5% of the assigned grade, per day, including weekends.***

### Note on avoidance of academic offences:

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>

**Appeals:** A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>

**Academic Integrity website (Arts):** [http://arts.uwaterloo.ca/arts/ugrad/academic\\_responsibility.html](http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html)

**Academic Integrity Office (UW):** <http://uwaterloo.ca/academicintegrity/>

### Accommodation for Students with Disabilities:

**Note for students with disabilities:** The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.

### About Your Instructor

In my research I aim to understand the processes involved in higher cognitive functions such as memory, attention and language. I use a combination of behavioural tests and neuro-imaging to identify the brain basis of these functions. In addition I study how the normal aging process affects cognition, particularly one’s ability to carry out memory tasks concurrently with other tasks (dual-tasking). This work is used to test and refine current models of how memory encoding and retrieval operate.

The following pages contain the Tentative Schedule for classes:

Topic	Readings and Assignments	Dates
Introduction to Neuropsychology	Chapter 1 Organize for Presentations	Friday Jan. 8 <sup>th</sup>
Assessing Cognitive Functions Methods of studying the brain	Chapter 2	Friday Jan. 15 <sup>th</sup>
Amnesia Epilepsy	Chapter 3 Chapter 4	Friday Jan. 22 <sup>nd</sup>
Aphasia Neglect	Chapter 5 Chapter 7	Friday Jan. 29 <sup>th</sup>
Autopagnosia Agnosias	Chapter 6 Chapter 8	Friday Feb. 5 <sup>th</sup>
Lake Ontario Visionary Establishment (L.O.V.E.) conference – Niagara Falls	No formal class Optional attendance at L.O.V.E. conference	Friday Feb. 12 <sup>th</sup>

Topics	Readings and Assignments	Dates
<b>Reading week</b>	<b>No Class</b>	<b>Friday Feb. 19<sup>th</sup></b>
Frontal lobe dysfunction Traumatic Brain Injury	Chapter 9 Chapter 10 or 11	Friday Feb. 26 <sup>th</sup>
Brain hemorrhage Or Neurotoxicity  Parkinson disease Or Huntington disease Or Dementia	Chapter 12 or 13  Chapter 15, 16, or 17	Friday March 5 <sup>th</sup>
Split Brain  Half Brain	Chapter 18  Chapter 19	Friday March 12 <sup>th</sup>
<b>Short Presentations</b>	<b>Various Articles</b>	<b>Friday March 19<sup>th</sup></b>
<b>Term Test</b>	<b>Term Test</b>	<b>Friday March 26<sup>th</sup></b>
<b>Class Debate</b>	<b>Various Articles</b>	<b>Monday April 5<sup>th</sup></b>