

**University of Waterloo, Department of Psychology**  
**Psych 461 Case Studies in Neuropsychology**  
**Spring 2021; online delivery due to Covid restrictions**  
**Mondays and Tuesdays 10am until 10:50am via Microsoft Teams**

**Instructor and T.A. Information**

Instructor: Dr. Myra Fernandes  
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Office Hours: Tuesdays 10:50pm-11:50pm on MS Teams  
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**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 on the brain basis of cognitive processes such as attention, perception, personality, emotion, memory, decision making, and language capacity.

**Course Goals and Learning Outcomes**

We 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.

\*This PSYCH 461 undergraduate seminar will be delivered by Dr. Myra Fernandes, remotely due to COVID-related restrictions. There will be Twice Weekly video lectures & seminars: Mondays and Tuesdays 10am until 10:50am via Microsoft Teams. These lectures will be recorded, and posted on LEARN within 24 hours, for access by those students who could not attend the lecture. Students will also have a chance to present to the class during these seminar timeslots. The recorded MS Teams presentation link to the recorded video will be posted immediately afterwards. Alternatively, a student can complete their presentation by creating voice-over Power point slides, which will be posted to LEARN, for the benefit of the whole class. All remaining assignments and tests must be submitted via the LEARN platform, by the dates listed in this Syllabus.

Upon completion of this course, students should be able to demonstrate:

- A. Depth and Breadth of Knowledge
  - Develop knowledge and critical understanding of the key concepts, methodologies, current advances, theoretical approaches and assumptions in the specialized area of cognitive neuropsychology
- B. Knowledge of Methodologies
  - Use scientific reasoning, to interpret neuroimaging, patient, and developmental disorders as they inform various psychological phenomena
  - Demonstrate psychology information literacy, and ability to search electronic databases
- C. Application of Knowledge
  - Gather, review, evaluate and interpret information to compare the merits of alternate hypotheses  
Develop critical thinking and analytical skills inside and outside the discipline
- D. Communication in oral and written format
  - Demonstrate effective writing for different purposes
  - Develop and present orally, an understanding of methods of enquiry using patients and neuroimaging approaches to evaluate current theories, devise and sustain arguments about brain-behaviour function, and propose or describe novel solutions to ameliorate brain dysfunction.

### **Required Text**

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

Available as e-text for free through UWaterloo library ([www.lib.uwaterloo.ca](http://www.lib.uwaterloo.ca)) or can be ordered online for delivery of a hard copy through our UW bookstore, or an e-copy via VitalSource e-store at : <https://uwaterloo-store.vitalsource.com/products/fractured-minds-jenni-a-ogden-v9780199883721?term=9780195171365>

### **Readings Available on LEARN under the Content tab**

- Ardila, A., & Bernal, B. (2007). What can be localized in the brain? Toward a “factor” theory on brain organization of cognition. *International Journal of Neuroscience*, 117(7), 935-969.
- Axmacher, N., Elger, C. E., & Fell, J. (2009). The specific contribution of neuroimaging versus neurophysiological data to understanding cognition. *Behavioural brain research*, 200(1), 1-6.
- Caramazza, A., & Coltheart, M. (2006). Cognitive neuropsychology twenty years on. *Cognitive Neuropsychology*, 23(1), 3-12.
- Coltheart, M. (2006). What has functional neuroimaging told us about the mind (so far)?. In *European Cognitive Neuropsychology Workshop, 2005, Bressanone, Italy; Position paper presented to the aforementioned conference..* Masson Italia.

## Course Requirements and Assessment

Information on course requirements and assessments.

Assessment	Date of Evaluation (if known)	Weighting
Synthesizing neuroimaging with patient work	due June 14th-15th	10%
Take-home Test	due July 12th	35%
Case Study – Group Presentation	due July 13th-August 3rd	20%
Case Study – Summaries (3 X 5%)	due by August 3rd	15%
Debate Paper	due August 11th	20%
<b>Total</b>		<b>100%</b>

Notes on the various class assessments

### Assessment 1

Synthesizing neuroimaging with patient work - Individual presentation

On June 14th and 15th students will each be completing a 4-minute Power Point presentation, and will communicate it 'live' to the class during our Monday or Tuesday timeslots via MS Teams. Alternatively, a student can choose to submit a 'voice-over' Power Point presentation (instructions will be posted on LEARN), via the DROPBOX on LEARN, by 9am on the date of the scheduled presentation. Dr. Fernandes will make the file available for the class to hear, by posting it on LEARN.

Specific requirements for the presentation are as follows:

Pick any syndrome that affects cognition. Find a research article (you must consult recognized peer-reviewed journals for this, which can be accessed using our UWaterloo library resources), in which the 'main affected cognitive behaviour' has been examined using a neuroimaging methodology (fMRI/EEG/ERP/TMS/PET).

Name the neuroimaging method used, show the findings, and explain what additional information we have learned from this neuroimaging publication, over and above what was learned from studying patients with the syndrome/disorder. Discussion with classmates following your presentation is encouraged. This presentation is worth 10%. This assignment is designed to give you a chance to investigate and discuss the behaviour/syndrome you are most interested in, and discover the neural basis underlying its effects.

### Assessment 2

Take-Home Test

The test will assess students' understanding of lectures plus the assigned chapter readings. The test will also assess students' ability to synthesize information learned in the course, and apply it to understanding and interpretation of select disorders and/or cognitive impairments. The test is worth 35%; it will consist of multiple choice, short answer and essay questions, and is DUE MONDAY July 12th by noon.

### Assessment 3

Case Study - Group Presentation

Students must select their top 2 preferences for topics/presentation dates for the Case Study Group

Presentation and email this to TA Ryan by Monday May 31st. Assignment of students to presentation dates and topics will then be prepared, and a schedule of presentations and dates will be posted by June 7th, 2021.

From July 13th to August 3rd, groups of students will be presenting each week. For each of the listed Topics/Date, groups (of 2 students each) will prepare a 20-minute Power Point presentation. Each student will be responsible for 10-minutes of the content.

Each student must prepare their OWN 10-minute presentation, and communicate it 'live' to the class during our Monday or Tuesday timeslot via MS Teams. Alternatively, instead of a live presentation, a student can choose to submit a 'voice-over' Power Point presentation (instructions will be posted on LEARN), via the DROPBOX on LEARN, by 9am on the date of the scheduled presentation. Dr. Fernandes will make the file available for the class to hear, by posting it on LEARN.

Specific requirements for the presentation are as follows:

Student 1 (10 minutes): will describe the Case Study described in the chapter, and explain the methods used to assess functions. That student will highlight a main contribution of the patient to our understanding of human cognition. That student will then outline tests (clinical, or experimental/cognitive) they believe are missing, or will suggest different approaches that could better describe the patient, based on their reading of published journal articles of recent similar cases (the student must consult recognized peer-reviewed journals for this, which can be accessed using our UWaterloo library resources).

Student 2 (10 minutes): will find and choose 2 similar cases reported in published journal articles (the student must consult recognized peer-reviewed journals for this, which can be accessed using our UWaterloo library resources). That student will compare and contrast the cognitive assessments performed in each of these 2 similar cases, to the one described in the textbook. Finally, that student will explain how each of these 2 'similar' cases has uniquely contributed to the field of human cognition.

Groups must coordinate who will present as Student 1 and who as Student 2. Beyond this, students can choose to work together or not. Each student's presentation is graded individually. The presentation is worth 20%.

#### **Assessment 4**

##### Case Study Summaries

You will write Case Study summaries based on your classmates' Case Study presentations, using the template posted on LEARN. For each summary 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.

Each Case Study Summary is worth 5%, and you should complete 3 of these (3 X 5% = 15%). Students are encouraged to submit at least 1 Case Study summary per week, during the weeks of July 13th to August 3rd to space out their workload. You must submit all 3 of these by Tuesday August 3rd at 11:59pm.

## **Assessment 5**

### Debate Paper

A selection of recent articles discussing the pros and cons of Neuropsychological patient studies, and of Neuroimaging research, will be posted on LEARN.

Students will be expected to read these articles, and then prepare a 3-page paper (plus any reference citations on an additional page): You must answer the following questions, based on your reading of the articles posted on LEARN, and in this course: “What can we learn from a broken brain?” and “What can we learn about the brain from Neuroimaging?”. This debate paper is worth 20%, and is DUE AUGUST 11th by 11:59pm

### **Note about submissions:**

All written submissions in this course, must be submitted via the Dropbox on Learn. These written submissions must be double-spaced, in Times New Roman, 12 point font, with 2cm margins all around.

### **Schedule of Weekly Topics:**

The schedule for the term is on the next few pages. Updates or any modifications to this schedule, will be posted in Announcements on LEARN. Supporting documents about University policies, Recording of students in lectures, and Technical instructions about giving presentations via MS Teams, and submitting ‘voice-over’ presentations, will be posted on Learn. Students are expected to familiarize themselves with this material.

### **Territorial Acknowledgement**

We acknowledge that we are living and working on the traditional territory of the Attawandaron (also known as Neutral), Anishinaabe and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land promised to the Six Nations that includes ten kilometres on each side of the Grand River.

For more information about the purpose of territorial acknowledgements, please see the [CAUT Guide to Acknowledging Traditional Territory](#).

## Course Outline

Week	Date	Topic	Readings
1	May 10, 11	Syllabus, Course textbook	Learn website
2	May 17, 18	Introduction to Neuropsychology	Chapter 1
3	May 25 (no class May 24)	Methods of studying the brain	Chapter 1
4	May 31, June 1	Assessing cognitive function	Chapter 2
5	June 7, 8	Amnesia	Chapter 3
6	June 14, 15	Synthesizing neuroimaging and patient work – Individual presentations	Student's choice
7	June 21, 22	Epilepsy	Chapter 4
8	June 28, 29	Aphasia	Chapter 5
9	July 5, 6	Frontal lobe dysfunction	Chapter 6
10	July 12, 13	Careers in Cognitive Neuroscience  Case Study - Group Presentation: Neglect  Case Study - Group Presentation: Agnosias	Chapter 7  Chapter 8
11	July 19, 20	Case Study - Group Presentation: Severe Traumatic Brain injury  Case Study - Group Presentation: Mild Traumatic Brain injury  Case Study - Group Presentation: Subarachnoid Hemorrhage  Case Study - Group Presentation: Neurotoxicity	Chapter 10 and 11  Chapter 12 and 13
12	July 26, 27	Case Study - Group Presentation: Multiple Sclerosis  Case Study - Group Presentation: Parkinson's  Case Study - Group Presentation: Huntington's Disease  Case Study - Group Presentation: Dementia	Chapter 14 and 15  Chapter 16 and 17
13	August 3	Case Study - Group Presentation: Split Brain  Case Study - Group Presentation: Half-Brain	Chapter 18 and 19

## **Late Work**

It is the student's responsibility to hand in late assignments, tests or papers directly to Dr. Fernandes via email. These will be subject to a late penalty of –5% of the assigned grade, per day, including weekends.

## **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. Check the [Office of Academic Integrity webpage](#) for more information.

## **Discipline**

A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for their actions. Check [the Office of Academic Integrity](#) for more information. 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](#). For typical penalties check [Guidelines for the Assessment of Penalties](#).

## **Concerns about a Course Policy or Decision**

**Informal Stage.** We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Affairs (Richard Eibach) is available for consultation and to mediate a resolution between the student and instructor: Email: [reibach@uwaterloo.ca](mailto:reibach@uwaterloo.ca); Ph 519-888-4567 ext. 38790

## **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. When in doubt, please be certain to contact Richard Eibach, the Associate Chair for Undergraduate Affairs who will provide further assistance; [reibach@uwaterloo.ca](mailto:reibach@uwaterloo.ca).

## **Appeals**

A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 - Student Discipline may be appealed if there is a ground. A student who believes they have a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

## **Note for Students with Disabilities**

The [AccessAbility Services](#) office, located on the first floor of the Needles Hall extension (NH 1401), 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 AS office at the beginning of each academic term.

### **Accommodation for course requirements for Psychology courses.**

*Policies of the Psychology department pertaining to course requirements are available on the [department website](#).*

### **Mental Health Support**

All of us need a support system. The faculty and staff in Arts encourage students to seek out mental health support if they are needed.

#### **On Campus**

***Due to COVID-19 and campus closures, services are available only online or by phone.***

- Counselling Services: [counselling.services@uwaterloo.ca](mailto:counselling.services@uwaterloo.ca) / 519-888-4567 ext. 32655
- [MATES](#): one-to-one peer support program offered by the Waterloo Undergraduate Student Association (WUSA) and Counselling Services

#### **Off campus, 24/7**

- [Good2Talk](#): Free confidential help line for post-secondary students. Phone: 1-866-925-5454
- Grand River Hospital: Emergency care for mental health crisis. Phone: 519-749-4300 ext. 6880
- [Here 24/7](#): Mental Health and Crisis Service Team. Phone: 1-844-437-3247
- [OK2BME](#): set of support services for lesbian, gay, bisexual, transgender or questioning teens in Waterloo. Phone: 519-884-0000 extension 213

Full details can be found online on the Faculty of Arts [website](#)

Download [UWaterloo and regional mental health resources \(PDF\)](#)

Download the [WatSafe app](#) to your phone to quickly access mental health support information.