

## 307 Human Neuropsychology – Fall 2018

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Office Hours: By appointment

\*\*\* Monday/Wednesdays 4:00 – 5:20 in PAS 2083\*\*\*

### Teaching Assistants

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**Course Web Page:** Lectures will be available on LEARN.

### Course Description and Aims

The focus of this course is to develop broad based knowledge concerning human behaviour from a neuropsychological perspective: primarily, this means viewing behaviour through the lens of neuro, Dementias and logical damage. Basic research and clinical examples will be used to explore the brain-behaviour relationships inherent in vision and attention, memory, executive control, and beyond.

### Assessment

#### Exams

The course will be divided into three sections with each section examined largely independently (i.e., exams will only contain a small portion of cumulative material) comprising 2 midterm exams and one final exam. Each section's exam will be a mixture of multiple choice, fill-in-the-blanks, diagrams and short answer questions. Together, the first two exams account for 50% of the final grade. The best result of the first two midterms will be given a higher weighting (see below for full breakdown). The final exam will be worth 25% of the final grade.

#### Written Assignment

The final 25% of your grade will come from the following written assignment.

Choose a journal article relevant to one of the topics covered in the course. PubMed is a good search engine for this kind of thing (<http://www.ncbi.nlm.nih.gov/pubmed>). Critique the article with the following components to your paper:

1. Summarize the paper's main findings (~500 words)
2. Propose an alternate hypothesis to account for those findings (~500 words)
3. Design a follow-up experiment to test your hypothesis (~1,000 words)
4. Explain how data from your experiment would advance our understanding in a broader sense (~500 words)

You should submit the journal article you chose to critique as part of your assignment. Step 1 should only include any description of methodology insofar as it pertains to explaining the main

findings. Step 2 should have clear directional hypotheses that support your alternate account. Step 3 should include enough detail to make it possible to critique your proposed design – that is, I am not expecting the level of detail required by an actual study – instead, think of this as a discussion you might have with a collaborator expecting your design to be modified to suit the goals of your study. Step 4 should be clear and direct – no vague statements about saving the world and curing cancer are allowed!

The goals of this assignment are threefold:

1. Develop your critical thinking skills when reading science. Sometimes it can feel like a study represents the final say on a matter when in fact this is rarely, if ever, the case.
2. Develop creative ways to address questions of brain-behaviour relationships in humans. People often view science as rigid and formulaic, but the best science depends a great deal on creatively addressing a problem.
3. Think clearly and carefully about the relevance of blue sky research. Seeing utility in applied research is easy – it is directed fairly narrowly at addressing one specific problem. Seeing how so-called “blue sky” research is relevant to the “real world” can be more challenging but is absolutely worth doing.

I have never cared about formalities in assignments. Don't ask me how many references you need – ask yourself that. References are required when claims of fact are being made – so if you make a claim of fact, reference it. Be careful not to reference web sites as your only source – that's not science. And don't under any circumstance reference my lectures – it's not a verifiable source. Don't ask me what style I would like this to be in. The style I like most is “Comprehensible” – the APA may think they have cornered the market on the most appropriate way to write science but I beg to differ. So long as your work is clear and comprehensible I don't care how you lay it out. Beyond that, come and see me to ask anything you want!

**The due date for the written assignment is Wednesday November 14<sup>th</sup>.**

### Participation in Experiments

You can earn four percent (4%) in **bonus marks** from participation in experiments through the Research Experiences Group (see details below under **Research Experiences Group (REG) Participation in Psychology Research**). In this instance .5% can be earned by participating in one half hour experiment, so to get the full 4% you will need to complete 4 full hours of experiments (see details below). If you decide you do not want to participate in experiments you can complete an alternate assignment to be determined by the instructor (alternate assignments will each be worth 1% and typically consist of one page summaries of journal articles).

Experimental credits must all be finalised by December 4<sup>th</sup>.

### **Alternate Exams**

Students unable to take the midterm exams on the scheduled dates for any reason will be able to take make up exams scheduled with the instructor/TAs. Note, make up exams will not necessarily be in the same format as the original exam. The format chosen will be at the discretion of the instructor and could be in essay format, oral exam or in a standard (e.g., multiple choice) format.

### Summary of Assessment for Grade

Mid term 1	20 or 30% (higher weighting for better grade compared to MT2)
Mid term 2	20 or 30% (higher weighting for better grade compared to MT1)
Final exam	25%
Assignment	25%

### Bonus marks

REG participation	4%
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### Exam dates are as follows:

**\*\*\* MIDTERM EXAM 1 – Wednesday Oct 3<sup>rd</sup> \*\*\***

**\*\*\* MIDTERM EXAM 2 – Monday Nov 5<sup>th</sup> \*\*\***

**\*\*\* FINAL EXAM – TBD during exam period \*\*\***

### Recommended Reading

I will not be setting a specific text book for this course. I will place multiple copies (3) of the following two text books on reserve in the library for those who want to delve deeper into each topic we cover. Exams will be based on lecture material, but it is worth noting that the lectures are derived in large part from these (and other) texts.

Banich, M. T. *Cognitive Neuroscience and Neuropsychology*, (2003) Houghton Mifflin Co. New York.

Gazzaniga, Ivry, & Mangun. *Cognitive Neuroscience: The biology of the Mind, 4<sup>th</sup> Edition*, (2014). W.W. Norton

To be clear – these two text books are on reserve as *recommended reading only* – if you read the relevant chapters you will solidify your knowledge of the material. But if you attend classes you will be exposed to all you need to be able to perform well on the exams.

### Topic Relevant Journal Articles

Instead of a text book I will set aside 15 minutes at the end of each topic to discuss a relevant journal article from the recent past. The lecture is intended to give you the base knowledge we have gained over decades or longer, whereas the journal article is intended to show you a little of the “leading edge” work. I will make the papers available for download on LEARN. There will be one exam question based on each journal article covered.

### Lecture Topics (note: no dates provided as they may change throughout the term)

Topic 1	History of Neuropsychology <a href="#">Article: Eling &amp; Finger (2015) <i>Cortex</i>, 71, 102–115</a>
Topic 2	Methodology <a href="#">Article: Sandrone et al., (2014) <i>Brain</i>, 137, 621–633</a>
Topic 3	Neuroanatomy

No Journal Article

- Topic 4      Hemispheric Specialisation                      (Banich Ch 4)  
Article: Miller et al., (2010) *Neuropsychologia*, 48, 2215–2220
- Topic 5      Duplex Model of Vision  
Article: Whitwell et al, (in press) *Psychonomic Bulletin & Review*. 1–7
- Topic 6      Object Recognition                                      (Banich Ch 6)  
Article: Konkle & Carramazza (2013) *The Journal of Neuroscience*, 33, 10235–10242
- Topic 7      Spatial Perception                                      (Banich Ch 7)  
Article: Saj et al., (2014) *Clinical Neurophysiology*, 44, 33–40
- Topic 8      Attention                                                      (Banich Ch 8)  
Article: Hayden et al., (2011) *Nature Neuroscience*, 14, 933–939
- Topic 9      Unilateral Neglect  
Article: Saj et al., (2014) *Psychological Science*, 25, 207–214
- Topic 10     Executive Functions                                      (Banich Ch 11)  
Article: Hummer et al., (2014) *Brain and Cognition*, 88, 26–34
- Topic 11     Memory                                                      (Banich Ch 10)  
Article: Oflaz et al., (in press) *Journal of Psychiatric Research*, 1–7
- Topic 12     Emotion                                                      (Banich Ch 12)  
Article: Decety et al., (2014) *Social Neuroscience*, 9, 36–49
- Topic 13     The Default Mode of the Human Brain  
Article: Raichle & Snyder (2007) *NeuroImage*, 37, 1083–1090
- Topic 14     Aging and the brain                                      (Banich Ch 13)  
Article: Nguyen et al., (in press) *Journal of Clinical and Experimental Neuropsychology*, 1–14
- Topic 15     Dementias                                                      (Banich Ch 14)  
No Journal Article
- Topic 16     Schizophrenia                                              (Banich Ch 14)  
Article: Menon et al., (2011) *Biological Psychiatry*, 70, 1127–1133
- Topic 17     Language                                                      (Banich Ch 9)  
Article: Zhang et al., (2013) *Clinical Neurology and Neurosurgery*, 115, 2230–2233

## Academic Integrity

**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. See the [UWaterloo Academic Integrity webpage](#) and the [Arts 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 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](#). 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 he/she has a ground for an appeal should refer to [Policy 72 - Student Appeals](#).

## Accommodation for Students with Disabilities

**Note for students with disabilities:** The [AccessAbility Services](#) office, located on the first floor of the Needles Hall extension (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

- Students requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should do the following:
  - Consult the University’s [examination regulations](#) for information about procedures and policies for requesting accommodations
  - seek medical treatment as soon as possible
  - obtain documentation of the illness with a completed [uWaterloo Verification of Illness Form](#)

- submit that form to the instructor within 48 hours. Students in Centre for Extended Learning (CEL) courses must submit their confirmation of the illness to CEL.
  - (if possible) inform the instructor by the due date for the course requirement that you will be unable to meet the deadline and that documentation will be forthcoming.
- In the case of a missed final exam, the instructor and student will negotiate an extension for the final exam, which will typically be written as soon as possible, but no later than the next offering of the course.
- In the case of a missed assignment deadline, midterm test, or quiz, the instructor will either:
  - waive the course component and re-weight remaining term work as he/she deems fit according to circumstances and the goals of the course, or
  - provide an extension.
- In the case of bereavement, the instructor will provide similar accommodations to those for illness. Appropriate documentation to support the request will be required.
- Students who are experiencing extenuating circumstances should also inform their academic advisors regarding their personal difficulties.
- Elective arrangements such as travel plans are not acceptable grounds for granting accommodations to course requirements per the uWaterloo Examination Regulations and Related Matters.

### **Official version of the course outline**

If there is a discrepancy between the hard copy outline (i.e., if students were provided with a hard copy at the first class) and the outline posted on LEARN, the outline on LEARN will be deemed the official version. Outlines on LEARN may change as instructors develop a course, but they become final as of the first class meeting for the term.

### **Mental Health Services**

Mental Health Services aim is to provide holistic programming and services to help you lead a healthy and balanced life. We strive to provide a secure, supportive environment for students of all orientations and backgrounds.

Students suffering from problems with anxiety, depression, problems with sleep, attention, obsessions or compulsions, relationship difficulties, severe winter blues, etc., may make an appointment by phone or in person. Appointments are usually available within two days of initial contact with one of our medical doctors. All contacts are completely confidential.

#### **Contact Health Services**

[Health Services Building](#)

Call 519-888-4096 to schedule an appointment

Call 1-866-797-0000 for free 24/7 advice from a health professional

#### **Contact Counselling Services**

[Needles Hall Addition, NH 2401](#)

Call 519-888-4567 x 32655 to schedule an appointment

[counserv@uwaterloo](mailto:counserv@uwaterloo).

## **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 six miles on each side of the Grand River.

## **Research Experience Marks Information and Guidelines**

Experiential learning is considered an integral part of the undergraduate program in Psychology. Research participation is one example of this, article review is another. A number of undergraduate courses have been expanded to include opportunities for Psychology students to earn grades while gaining research experience.

Since experiential learning is highly valued in the Department of Psychology, students may earn a "**bonus**" **grade of up to 4%** in this course through research experience. Course work will make up 100% of the final mark and a "bonus" of up to 4% may be earned and will be added to the final grade if/as needed to bring your final grade up to 100%.

The two options for earning research experience grades (participation in research and article review) are described below. Students may complete any combination of these options to earn research experience grades.

### **Option 1: Participation in Psychology Research**

Research participation is coordinated by the Research Experiences Group (REG). Psychology students may volunteer as research participants in lab and/or online (web-based) studies conducted by students and faculty in the Department of Psychology. Participation enables students to learn first-hand about psychology research and related concepts. Many students report that participation in research is both an educational and interesting experience. Please be assured that all Psychology studies have undergone prior ethics review and clearance through the Office of Research Ethics.

### ***Educational focus of participation in research***

To maximize the educational benefits of participating in research, students will receive feedback information following their participation in each study detailing the following elements:

- Purpose or objectives of the study

- Dependent and independent variables
- Expected results
- References for at least two related research articles
- Provisions to ensure confidentiality of data
- Contact information of the researcher should the student have further questions about the study
- Contact information for the Director of the Office of Research Ethics should the student wish to learn more about the general ethical issues surrounding research with human participants, or specific questions or concerns about the study in which s/he participated.

Participation in LAB studies is worth 0.5 participation credits (grade percentage points) for each 30-minutes of participation. Participation in ONLINE studies is worth .25 credits for each 15-minutes of participation. Researchers will record student's participation and will advise the course instructor of the total credits earned by each student at the end of the term.

### ***How to participate?***

Study scheduling, participation and grade assignment is managed using the SONA online system. All students enrolled in this course have been set up with a SONA account. You must get started early in the term.

[INSTRUCTIONS/DATES/DEADLINES: How to log in to Sona and sign up for studies](#)

*\*\*\* Please do not ask the Course Instructor or REG Coordinator for information unless you have first thoroughly read the information provided on this website. \*\*\**

More information about the REG program is available at:  
[REG Participants' Homepage](#)

### **Option 2: Article Review as an alternative to participation in research**

Students are not required to participate in research, and not all students wish to do so. As an alternative, students may opt to gain research experience by writing short reviews (1½ to 2 pages) of research articles relevant to the course. The course instructor will specify a suitable source of articles for this course (i.e., scientific journals, newspapers, magazines, other printed media). *You must contact your TA to get approval for the article you have chosen before writing the review.* Each review article counts as one percentage point. To receive credit, you must follow specific guidelines. The article review must:



- **Be submitted before the [last day of lectures](#). Late submissions will NOT be accepted under ANY circumstances.**
- Be typed
- Fully identify the title, author(s), source and date of the article. A copy of the article must be attached.
- Identify the psychological concepts in the article and indicate the pages in the textbook that are applicable. Critically evaluate the application or treatment of those concepts in the article. If inappropriate or incorrect, identify the error and its implications for the validity of the article. You may find, for example, misleading headings, faulty research procedures, alternative explanations that are ignored, failures to distinguish factual findings from opinions, faulty statements of cause-effect relations, errors in reasoning, etc. Provide examples whenever possible.
- Clearly evaluate the application or treatment of those concepts in the article.
- Keep a copy of your review in the unlikely event we misplace the original.