

307 Human Neuropsychology – Fall 2015

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Office Hours: By appointment. The hour after class is typically good.
*** Tuesdays and Thursdays 10:00 - 11:20 a.m. AL 211 ***

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 neurological 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 independently (i.e., exams will not be cumulative). 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 55% 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 20% of the final grade. Thus, the three midterms make up 75% of the final grade.

Labs

We will be running three lab components. One will focus on neuroanatomy to help navigate through terminology (e.g., contra- vs. ipsilateral) and brain regions used throughout the course. A second lab will focus on clinical testing and will involve some data collection and analysis, and the third lab will involve group work leading to a brief

(~5 minutes) presentation concerning a specific disorder (details will be provided in class and in the earlier labs). To manage the labs given the expected class size we will split into 3 separate rooms – group assignment will be made through LEARN. Each lab is worth 3% of the final grade – attendance and participation account for the grade.

Labs will be held in the three following rooms:

October 6 th	Room 1:	AL 211
	Room 2:	QNC 1506
	Room 3:	QNC 2501
October 27 th	Room 1:	AL 211
	Room 2:	MC 4045
	Room 3:	QNC 2501
November 17 th	Room 1:	AL 211
	Room 2:	QNC 1506
	Room 3:	QNC 2501

Written Assignment

The final 16% 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 in three small steps 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!

For those interested in receiving extensive feedback on their assignment the due date is Thursday October 22nd.

For those happy to simply receive a numerical grade the due date is Tuesday November 10th.

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 Dr. Dankert (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 4th.

Alternate Exams

Students unable to take the mid term 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 35% (higher weighting for better grade compared to MT2)
Mid term 2	20 or 35% (higher weighting for better grade compared to MT1)

Mid term 3	20%
Labs	9%
Assignment	16%

Bonus marks

REG participation	4%
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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 my 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, 4th 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 past year or so. 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.

Course Outline

I have placed two topics on LEARN that I consider to be background material for this course. The topics covered are:

1. Neuroanatomy (Banich Ch 1 & 2)
2. Methods in Cognitive Neuroscience (Banich Ch 3)

Each of these topics is on LEARN as a Powerpoint file. I had created audio files to accompany these lectures but this made the files too large to upload. If you need clarification of any of the material in these lectures please consult your TAs.

Lecture Schedule (note topic dates are subject to change)

Week 1

Sep 15th Introduction to Human Neuropsychology

Sep 17 th	Topic 1 History of Neuropsychology Journal Article: Sandrone et al., (2014) <i>Brain</i> , 137, 621–633
Week 2 Sep 22 nd	Topic 2 Single Case Methodology No Journal Article
Sep 24 th	Topic 3 Hemispheric Specialisation (Banich Ch 4) Journal Article: Miller et al., (2010) <i>Neuropsychologia</i> , 48, 2215–2220
Week 3 Sep 29 th	Topic 4 Basic Vision No Journal Article
Oct 1 st	Topic 5 Dual Pathways to Vision Journal Article: Milne et al, (2013) <i>Psychological Science</i> , 24, 1456–1465
Week 4 Oct 6 th	<i>Lab 1 Neuroanatomy</i>
Oct 8 th	Topic 6 Object Recognition (Banich Ch 6) Journal Article: Konkle & Carramazza (2013) <i>The Journal of Neuroscience</i> , 33, 10235–10242
Week 5	
*** Section 1 exam – Thursday Oct 13th ***	
Oct 15 th	Topic 7 Spatial Processing (Banich Ch 7) Journal Article: Saj et al., (2014) <i>Clinical Neurophysiology</i> , 44, 33–40
Week 6 Oct 20 th	Topic 8 Attention (Banich Ch 8) Journal Article: Hayden et al., (2011) <i>Nature Neuroscience</i> , 14, 933–939
Oct 22 nd	Topic 9 Unilateral Neglect Journal Article: Saj et al., (2014) <i>Psychological Science</i> , 25, 207–214
Week 7 Oct 27 th	<i>Lab 2 Neuropsychological testing</i>
Oct 29 th	Topic 10 Language (Banich Ch 9) Journal Article: Zhang et al., (2013) <i>Clinical Neurology & Neurosurgery</i> , 115, 2230–2233

Week 8
Nov 3rd

Topic 11 Memory (Banich Ch 10)
Journal Article: Oflaz et al., (in press) *Journal of Psychiatric Research*, 1–7

***** Section 2 exam – Thursday Nov 5th *****

Week 9
Nov 10th

Topic 12 Executive Functions (Banich Ch 11)
Journal Article: Hummer et al., (2014) *Brain & Cognition*, 88, 26–34

Nov 12th

Topic 13 Emotion (Banich Ch 12)
Journal Article: Decety et al., (2014) *Social Neuroscience*, 9, 36–49

Week 10
Nov 17th

Lab 3 – Case presentations

Nov 19th

Topic 14 Schizophrenia (Banich Ch 14)
Journal Article: Menon et al., (2011) *Biological Psychiatry*, 70, 1127–1133

Week 11
Nov 24th

Topic 15 Aging and the brain (Banich Ch 13)
Journal Article: Nguyen et al., (in press) *Journal of Clinical and Experimental Neuropsychology*, 1–14

Nov 26th

Topic 16 Dementias (Banich Ch 14)
No Journal Article

Week 12
Dec 1st

Topic 17 The Default Mode of the Human Brain
Journal Article: Raichle & Snyder (2007) A default mode of brain function: A brief history of an evolving idea. *NeuroImage*, 37, 1083–1090.

***** Section 3 exam – Thursday Dec 3rd *****

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.

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](#).

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.

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](#).

Other sources of information for students:

[Academic Integrity website \(Arts\)](#)

[Academic Integrity Office \(UWaterloo\)](#)

Accommodation for Students with Disabilities

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

Concerns About the Course or Instructor (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 Studies (Richard Eibach from July 1, 2015 through June 30, 2016) is available for consultation and to mediate a resolution between the student and instructor. Contact information is as follows:

Richard Eibach Email: reibach@uwaterloo.ca; Ph 519-888-4567 ext 38790

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. See Policy 70 and 71 below for further details.

Students requesting accommodation for course requirements (assignments, midterm tests, final exams, etc.) due to illness should do the following:

- seek medical treatment as soon as possible and obtain a completed uWaterloo Verification of Illness Form: <https://uwaterloo.ca/health-services/student-medical-clinic/services/verification-illness>
- submit that form to the instructor within 48 hours.
- (preferably) 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 or midterm test, the instructor will either:

1. 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
2. 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.

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.

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.