

PSYCHOLOGY 301 - Section 002

Brain Dysfunction and Recovery

3 credits

University of British Columbia, Vancouver

Spring 2016

MWF 08:00A - 09:00A

Buchanan A101



Instructor: Dr. Michael Souza ("sues-uh")

E-mail: souza@psych.ubc.ca

Office Hours: Tuesdays 930-1030A
in CIRS 4344

Teaching assistant: Jenn Ferris

E-mail: jennifer.ferris@alumni.ubc.ca

Office Hours: Tuesdays 2P-3P in the
Brain Behaviour Lab: T-142a,
Koerner Pavillion (UBC Hospital)

I. About your instructor and teaching assistant (TA)



Dr. Souza is a Senior Instructor in the Department of Psychology. He received his Ph.D. in Psychology from Berkeley. His interests revolve around higher-order cognitive functions, neurological injury and rehabilitation. He is also interested in fostering opportunities that promote student development.

Jenn is a 2nd-year MSc student in Neuroscience. She received her BA (Hons) in Psychology from UBC. Her research focuses on the neuroplastic mechanisms of recovery from stroke.

II. Course description and goals

The brain is the most complex system in the universe. Though we have learned an incredible amount about neuroanatomy and brain injury to this point, there is still much to discover about how the brain repairs itself – providing that it does – when certain areas and functions are compromised. The goal of this course is to help equip you with tools to explore and better understand the relationship between brain dynamics and cognitive functioning in the context of neurorehabilitation across variety of domains (e.g., attention).

After successful completion of this course, you should have:

- developed knowledge about the link between neuroanatomy and cognition, and how various mental processes can be systematically scrutinized by neurologists and clinical neuropsychologists;
- applied a range of neurocognitive tools (e.g., fMRI) in the context of characterizing a patient's impairment and subsequent functional improvement, where possible;
- analyzed a variety of theories designed to explain the nature of dysfunction after a brain impairment, and evaluated the efficacy of various interventions inspired by these theories;
- synthesized what you've learned across the major cognitive domains to better appreciate the highly integrative nature of cognitive processes, and what future treatments may aim to target;
- gained an appreciation of the range of possible psychosocial effects associated with brain dysfunction;
- developed experience consuming and understanding primary literature in clinical neuropsychology;
- acquired knowledge about career prospects related to this science

This course is designed to be ideal for students with an interest in medicine, clinical neuropsychology, neuroscience, counselling psychology, and many other related fields.

III. Required readings

There is no textbook for this course. Instead, we will be reading original research articles. A full list of the articles and their associated topics can be found on the second to last page of this syllabus.

IV. Course webpage

<http://elearning.ubc.ca/connect/> (location for important announcements, lecture slides and grades)

V. Course requirements

Midterm Examinations I & II (26% for MT₁ and 34% for MT₂ = 60% of course grade)

Each midterm will consist of short-answer and multiple-choice questions. Short-answer questions may require a several sentence response based on the question complexity and may also require the creation of a visual aid (e.g., diagram). Short-answer questions will be weighted based on difficulty – not all questions will be worth the same number of points. Multiple-choice questions will have with five options each and these questions may come in various formats, including (but not limited to) questions with diagrams and “all of the above” or “none of the above” options. There will be more of a focus from lecture versus the readings but for superior performance, you must have a clear understanding of both lecture and the readings.

Cumulative Final Examination (40% of course grade)

The Final will be structurally similar to the midterms but it will be cumulative and longer. For the Final, every lecture is fair game but only readings after MT₂ will be testable. There will be more of a focus from lecture versus the readings but to perform well, you must have a clear understanding of both lecture and the textbook. **Please note: the date of the final is not announced by the University until mid-February. You should NOT make travel plans until you learn the date of your final exams. You CANNOT take the final at a different date/time unless you have a verifiable medical reason.**

VI. Research participation (extra credit opportunity)

In addition to your exam scores, you have the opportunity to earn up to three (3) extra percentage points on your overall final grade by participating in studies regularly conducted by the Psychology Department and coordinated through the human subject pool (HSP). This provides the valuable opportunity to observe the research process directly and to contribute to the ongoing research activities at UBC. The extra grades are obtained by signing up for the Psychology Subject Pool through their web site: <https://ubc-psych.sona-systems.com/>. **Please note that any inquiries about credits should be directed to HSP or the experimenters that you worked with, *not* the instructor.**

As an alternative to participating in studies, you may choose to complete library writing projects, in which you read and summarize a research article; each article summary counts as one hour of research participation. You must select a research article (not a letter to the editor, commentary, or review paper) published between 2000-present in the journal *Psychological Science*. Each summary should be about 500 words and should include the purpose, method and results of the study. Students should submit their assignments on TurnItIn, to class ID 6880064, entitled "Library Option for HSP", password "research". For more information, please visit: <http://psych.ubc.ca/internal/human-subject-pool/>. Please see www.turnitin.com, and click on the “Training” link at the top of the page for detailed instructions on how to submit papers. **Summaries must be submitted no later than 10 days before the end of classes.**

One percentage point is assigned to your final grade for each hour/credit of participation and partial credits will be rounded down (i.e., 1.5 hours = 1% extra credit). Credits can be recorded and tracked via the subject credit website. These credits are added to your grade at the end of the course. Make sure that you retain your portion of the experimental credit receipt in the event that verification of participation is required when

the final grades are compiled. If you do not correctly assign your credits to this course, you will NOT receive credit. The last day to earn and assign HSP credits earned by experiment participation is the final day of classes, which is April 8, 2016.

Please note: no other extra credit opportunities are available for this course

VII. Course grading

Your final grade consists of the items described in Section V. Performance for each of the items above will be put into a calculator that outputs your final course percentage earned. As mentioned in Section VI, any extra credit earned will be added to this final score.

In order to reduce grade inflation and maintain equity across multiple course sections, all psychology courses are required to comply with departmental norms regarding grade distributions. According to departmental norms, **the mean grade in a 300-level class is 70 for a good class, 68 for an average class, and 66 for a weak class, with a standard deviation of 13.** Scaling may be used in order to comply with these norms; grades may be scaled up or down as necessary by the professor or department. Grades are not official until they appear on a student's academic record. You will receive both a percent and a letter grade for this course. At UBC, your course percentage is converted according to the key below:

A+	90-100%	B+	76-79%	C+	64-67%	D	50-54%
A	85-89%	B	72-75%	C	60-63%	F	0-49%
A-	80-84%	B-	68-71%	C-	55-59%		

Remember, you are earning a degree at a highly reputable post-secondary institution. Therefore, criteria for success are high. The Faculty of Arts offers the following guidelines that broadly characterize the kind of work that is generally associated with the main grade ranges. These characteristics help to put the Psychology Department Grading Policies into context. Please note that adequate performance is in the C range, which is the typical class average.

A RANGE: *Exceptional Performance.* Strong evidence of original thinking; good organization in written work; capacity to analyze (i.e., break ideas down) and to synthesize (i.e., bring different ideas together in a coherent way); superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.

B RANGE: *Competent Performance.* Evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.

D-C RANGE: *Adequate Performance.* Understanding of the subject matter; ability to develop solutions to simple problems in the material; acceptable but uninspired work; not seriously faulty but lacking style and vigor.

F RANGE: *Inadequate Performance.* Little or no evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.

VIII. Course policies

Class participation

Active learning is a critical component of a proper education and for that reason it will be frequently promoted during the term. You may be asked to answer questions at any point in class and you are expected to do your best. It is OK to not know the answer in this context but it is NOT acceptable to not try.

Attendance and Powerpoint slides

Attendance is expected for every class period. In the event you miss a lecture, I strongly suggested that you acquire notes from a fellow classmate. The primary reason for this is that lecture slides are designed to give you a framework of our discussions, as opposed to giving you every piece of information discussed in class. For your convenience, lecture slides will usually be posted by 10PM the evening before a lecture. They will be posted in PDF format in two versions only (2 slides and 6 slides per page). ***Instructional materials are only for the purpose of learning in this course and must not be distributed or used for any other reason.***

Reading the assigned articles

There are two primary goals for the research articles. The first is to expose you to primary literature in the field of clinical neuropsychology. The second is to give you an opportunity to improve your ability to process and evaluate this work, as it is fundamentally different and more challenging than a standard textbook. Exam questions will primarily target your conceptual understanding of the articles, including items such as the goal(s) of the paper, key elements of the methods, the results and what they mean, and any key points of the author's discussion. Lecture will help prepare you to navigate the readings successfully.

E-mail policy

In most cases, e-mails will be answered within 48 hours of receipt (not including weekends). If you send the instructor or teaching assistant an email, the email subject should include the course and nature of the inquiry (i.e., "PSYC 301 – Question about constraint-induced therapy"). Emails that you send should contain no more than one question and you should try to explain your current understanding of the concept in the email (which will be affirmed or corrected).

Class discussion board on Connect

For your convenience, discussion threads will be created to improve information flow in our course. Logistical questions may be directed to the instructor on one thread. Inquiries, requests for class notes or study partners *directed to fellow students* may be posted on a second thread. Please note that you are NOT allowed to post class notes on the discussion board. Finally, current research in psychology will be posted on the third thread. Negative remarks on any of these discussion forums will not be tolerated and failure to respect this policy may result in your access to our course website being revoked.

Syllabus changes

There may be minor changes to the syllabus during the term. You will be notified of these changes ASAP and no changes will be instituted that dramatically affect your ability to properly prepare for an examination (i.e., reading two extra articles the week of the midterm).

Research articles added to assigned reading

In the event that a better article comes along that would enhance your experience in the course, it may be added in or substituted with an article that is currently on the course schedule. In the event that this occurs, ample notice will be given to allow you to adjust accordingly.

Office hours

You should consider visiting Jenn's office hours if you would like to review one of your midterm examinations (note: only Jenn will have your exams for review). In addition to her regularly scheduled office hours, Jenn will offer a couple of additional time windows to review exams. If you would like to review your exam, you must plan to attend one of these sessions. When reviewing your quizzes or midterm exam during office hours, you are NOT allowed to take notes or photos. **Failure to respect this policy will be treated as academic misconduct and will be handled accordingly.** You should also connect with Jenn if you would like

to discuss course content and/or study strategies, or you would like to discuss the field of psychology more broadly.

You should consider visiting Dr. Souza's office hours if you would like to discuss course content (or psychology more broadly) or if you have an issue with course performance or progress (e.g., would like to discuss your exam performance after meeting with Jenn or you missed an exam due to illness). Please note that any grading disputes (other than calculation errors) must be handled within two (2) weeks of the scores being released. Furthermore, if a student requests a re-mark of a short-answer question, the instructor will re-review the marking of all of their short answer questions.

Classroom conduct

Our classroom is a place where you should always feel safe and respected. It is also a place that is conducive to learning and intellectual curiosity. Any behaviors compromising this environment will not be tolerated and the student(s) and/or individual(s) will be asked to leave.

Taking an examination

In my opinion, punctuality to lectures and exams is a sign of respect to your instructor, teaching assistants and fellow students. Tardy students should not ask the instructor or teaching assistant for what they missed from lecture because they can ask a fellow student. Furthermore, a student will not be allowed to write a midterm or the Final if (1) s/he is tardy 30 minutes or more, or (2) a student has already finished and submitted their exam, whichever occurs first. Students in this situation, or any other situation where they miss the exam for a reason of a non-medical nature, will not be allowed to write the exam and will receive a "o." Absolutely no exceptions will be made to these policies.

There will be no "in and out" privileges once you've started an exam (e.g., bathroom break) unless you have a documented medical reason for such a need. Medical documentation must be disclosed with Dr. Souza at least 24 hours prior to the exam.

When time is called at the end of the exam, you must immediately stop working and submit your exam materials. You will not be allowed more time for any reason, including (but not limited to): putting your name or ID on the exam or filling in or changing an answer. You must also remain completely silent until every exam has been collected. Failure to stop working when time is called or to stay silent until all exams have been collected will result in a zero on the exam. Failure to put proper identifying information on the scantron or the short-answer portion of the exam will result in a zero for the appropriate section.

Missing a midterm or the Final

The midterms cannot be written at another time. You will not be accommodated for missing a midterm unless you have a valid doctor's note (which will be verified). If you are a student from the Faculty of Arts, you must meet with an Arts Advisor within 48 hours of missing the exam (unless it is medically impossible). If you are from a different faculty, you should provide Dr. Souza with your medical note within the same time frame. Non-Arts students may scan and email their medical note to Dr. Souza. Being excused from an examination is at the sole discretion of Dr. Souza.

If you are excused from Midterm 1, that portion of the course grade will be evenly split between Midterm 2 and the Final. If you are excused from Midterm 2, that portion of the course grade will be added to the Final. If you are excused from both Midterm 1 and Midterm 2, you will be assigned a research paper or project to make up for the portion of the grade corresponding to Midterm 2. If you miss the final examination, you must connect with Arts Advising to address the issue. Make-ups for the Final may differ from the version used for the rest of the class.

Access and Diversity

UBC is committed to equal opportunity in education for all students including those with documented physical or learning disabilities. If you believe you fall in this category, please visit this website (<http://www.students.ubc.ca/access/disability-services/support-students/exam-accommodations/>) to take the necessary steps to ensure that you have every opportunity that you deserve to excel here at UBC.

Grade bumps

When computing final grades, the instructor carefully analyzes every single student to determine whether a grade bump is deserved. Bumps may be awarded for consistent performance at a major grade boundary or for marked improvement from the midterm to the final (10%+ at minimum). Bumps are not guaranteed and are **not** awarded for non-academic reasons (i.e., student is graduating and/or involved in sports or other extracurricular activities). **DO NOT send the instructor an email asking for a grade bump.**

Academic Misconduct

Cheating, plagiarism, and other forms of academic misconduct are very serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. Relevant to this course, the Department has implemented software that, can reliably detect cheating on multiple-choice exams by analyzing the patterns of students' responses. This will be used for every assessment we take in this course.

In all cases of suspected academic misconduct, the parties involved will be pursued to the fullest extent dictated by the guidelines of the University. Strong evidence of cheating may result in a zero credit for the work in question. According to the University Act (section 61), the President of UBC has the right to impose harsher penalties including (but not limited to) a failing grade for the course, suspension from the University, cancellation of scholarships, and/or a notation added to a student's transcript.

Do note that during exams, the instructor and invigilators reserve the right to move students in their seating arrangement with no explanation provided.

IX. Links that you may find useful...

Generally useful information

UBC Academic Calendar

<http://www.calendar.ubc.ca/vancouver/academicyear.cfm>

UBC Access and Diversity

<http://students.ubc.ca/about/access>

Study skills, test anxiety tips

http://www2.swccd.edu/~asc/wphomepage_3_contents.html

Student professional development

Student Engagement at UBC Psychology

<http://engage.psych.ubc.ca>

UBC Career Services

<http://students.ubc.ca/career>

UBC Psychology student organizations

Psi Chi (local chapter of the Honors Society)

<http://psichi.psych.ubc.ca/>

Psychology Students' Association (PSA)

<http://psa.psych.ubc.ca/>

ASSIGNED READINGS

- Aylward, E.H. (2014). Magnetic resonance imaging striatal volumes: a biomarker for clinical trials in Huntington's disease. *Movement Disorders*.
- Beh, S.C., Muthusamy, B., Calabresi, P., Hart, J., Zee, D., Patel, V. et al. (2014). Hiding in plain sight: a closer look at posterior cortical atrophy. *Prac Neurol*, 0, 1-9.
- Bonni, S., Mastropasqua, C., Bozzali, M., Caltagirone, C. & Koch, Giacomo, K. (2013). Theta burst stimulation improves visuo-spatial attention in a patient with traumatic brain injury. *Neurol Sci*, 34, 2053-6.
- Catani, M. & Mesulam, M. (2008). What is a disconnection syndrome? *Cortex*, 44, 911-3.
- Choi, H.A., Badjatia, N. & Mayer, S.A. (2012). Hypothermia for acute brain injury—mechanisms and practical aspects. *Nature Rev Neurol*, 8, 214-22.
- Cumming, T.B., Marshall, R.S. & Lazar, R.M. (2013). Stroke, cognitive deficits, and rehabilitation: still an incomplete picture. *Intl J Stroke*, 8, 38-45.
- Laxton, A.W., Tang-Wai, D.F., McAndrews, M.P., Zumsteg, D., Wennberg, R., et al. (2010). A Phase I trial of deep brain stimulation of memory circuits in Alzheimer's disease. *Annals of Neurol*, 68(4), 521-34.
- Lohse, K.R., Lang, C.E. & Boyd, L.A. (2014). Is more better? Using metadata to explore dose-response relationships in stroke rehabilitation. *Stroke*, 45(7), 2053-8.
- Monti, M.M., Rosenberg, M., Finoia, P., Kamau, E., Pickard, J.D., et al. (2013). Thalamo-frontal connectivity mediates top-down cognitive functions in disorders of consciousness. *Neurology*, 84, 1-7.
- Omalu, B.I., DeKosky, S.T., Minster, R.L., Kamboh, M.I., Hamilton, R.L., et al. (2005). Chronic traumatic encephalopathy in a National Football League player. *Neurosurgery*, 57(1), 128-134.
- Owen, A.M., Hampshire, A., Grahn, J.A., Stenton, R., Dajani, S., et al. (2010). Putting brain training to the test. *Nature*, 465, 775-9.
- Reti, I.M., Schwarz, N., Bower, A., Tibbs, M. & Rao, V. (2015). Transcranial magnetic stimulation: a potential new treatment for depression associated with traumatic brain injury. *Brain Injury*, 29:7-8, 789-97.
- Stern, R.A., Daneshvar, D.H., Baugh, C.M., Seichepine, D.R., Montenigro, P.H., et al. (2013). Clinical presentation of chronic traumatic encephalopathy. *Neurology*, 81, 1122-9.
- Stinear, C.M. & Ward, N.S. (2012). How useful is imaging in predicting outcomes in stroke rehabilitation? *Intl J Stroke*, 8, 33-7.
- Zimmermann, N., Pereira, N., Hermes-Pereira, A., Holz, M., Joannette, Y., et al. (2015). Executive functions profile in traumatic brain injury adults: implications for rehabilitation studies. *Brain Injury*, 29:9, 1071-81.

Psychology 301: Lecture and reading schedule

note: contents of this schedule may change slightly with advance notice from the instructor

Mtg	Date	Topic	Assigned readings	
1	04-Jan	M	Course introduction	Review the syllabus
2	06-Jan	W	A brief history of the neurological	"Reading empirical articles"
3	08-Jan	F	patient	(from the <i>UConn Writing Centre</i>)
4	11-Jan	M	Fundamentals of neural anatomy and signal transmission	Catani (2008)
5	13-Jan	W		https://www.youtube.com/watch?v=iHxyP-nUhUY
6	15-Jan	F		https://www.youtube.com/watch?v=OMqWRlXo1oQ
7	18-Jan	M	The neurological examination and	http://neuroexam.med.utoronto.ca/
8	20-Jan	W	assessment	
9	22-Jan	F	Neuropsychological assessment	-
10	25-Jan	M	Cognitive neuroimaging techniques	Stinear (2013)
11	27-Jan	W		http://www.med.harvard.edu/aanlib/
12	29-Jan	F		
13	01-Feb	M	Stroke and traumatic brain injury	Cumming (2013)
14	03-Feb	W		
15	05-Feb	F	Midterm Examination #1	Meetings 2-14, associated readings
16	08-Feb	M	NO CLASSES - Family Day (BC)	-
17	10-Feb	W	Factors in the recovery of function	Choi (2013); Lohse (2014)
18	12-Feb	F	"Special assignment"	https://www.youtube.com/watch?v=MDHJDKPeB2A
19-21	15-19 Feb		NO CLASSES - Spring Recess	-
22	22-Feb	M	Consciousness	Monti (2014)
23	24-Feb	W		
24	26-Feb	F	Movement	Aylward (2014)
25	29-Feb	M		
26	02-Mar	W	Perception	Beh (2014)
27	04-Mar	F		
28	07-Mar	M	Attention	Bonni (2013)
29	09-Mar	W		
30	11-Mar	F	Memory and dementia	Laxton (2010)
31	14-Mar	M		
32	16-Mar	W	Midterm Examination #2	Meetings 21-35, associated readings
33	18-Mar	F		
34	21-Mar	M	Mood, anxiety and stress disorders	Reti (2015)
35	23-Mar	W		
36	25-Mar	F	Executive functions	Levine (2011); Zimmermann (2015)
37	28-Mar	M		
38	30-Mar	W	Chronic traumatic encephalopathy (CTE)	Omalu (2005); Stern (2013)
39	01-Apr	F		
40	04-Apr	M	New frontiers for cognitive training	Owen (2010)
41	06-Apr	W	Careers in neuropsychology	-
42	08-Apr	F	Course synthesis and conclusion	-
-	TBA	-	Cumulative Final Examination	Meetings 2-42, post-MT2 readings