

# PSYB55: Introduction to Cognitive Neuroscience

0.5 credits

University of Toronto, Scarborough

Summer, 2019

LEC99 (WebOption)



**Instructor:** Prof. Michael Souza (“sues-uh”)

**Email:** michael.souza@utoronto.ca

**Office:** PO103, Room 121 (enter through the side furthest from SW)

**Office Hours:** [Traditional, in person] Tuesdays 230PM-330PM

[Virtual, via Skype] Tuesdays 800PM-900PM [my username: ‘CanadianSouza’]

**TAs:** *Please find more information on our Quercus course website*

## I. Your instructor



**Dr. Souza** is an Associate Professor (Teaching Stream) in the Department of Psychology. He received his Ph.D. in Psychology from the University of California, Berkeley. His teaching interests revolve around higher-order cognitive functions, cognitive impairments and neurorehabilitation. He is also interested in fostering opportunities that promote student growth and development.

## II. Course description, pre-requisites and learning goals

The field of cognitive neuroscience is dedicated to exploring the biology of mental processes. With respect to content, the goal of this course is to provide you with a rigorous introduction to the field and the major domains in cognitive neuroscience (e.g., memory, language, cognitive control), with careful attention given to core theories, experimental designs, and the range of tools at our disposal. With respect to process, this course will introduce you how to conceptualize and concretize questions in cognitive neuroscience, how to deconstruct and answer short-answer questions, and how to approach a primary research article in the field of cognition. Taken together, this course is designed to provide you with the knowledge and fundamental skills necessary to further advance your understanding of the biological basis of cognition.

Prerequisites: PSYA01 and PSYA02

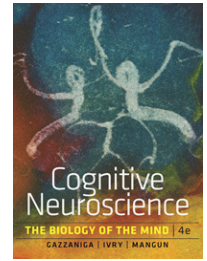
After successful completion of this course, you will have:

1. An understanding of the complementary roles of cognitive psychology and neuroscience in promoting a more holistic understanding of how the mind works;
2. An understanding of a range of useful neurocognitive tools, as well as when it would be most appropriate to use a given tool (or tools) with a particular inquiry of interest;
3. An understanding of core theories in different domains in cognitive neuroscience, as well as a framework for articulating the kind of evidence necessary to evaluate these theories;
4. Strengthened your ability to successfully deconstruct and respond to short-answer questions;
5. A working schema for consuming the core elements of a primary research article;
6. Synthesized your learning across the course to better understand the highly integrative and hierarchical nature of cognitive processes (i.e., attention’s role in creating new memories).

### III. Course textbook

Gazzaniga, M., Ivry, R.B. & Mangun, G.R. (2013). Cognitive Neuroscience: The Biology of the Mind (4<sup>th</sup> edition). New York, NY: W.W. Norton & Co. (ISBN-13: 978-0-393-91348-4)

You should NOT use other editions of this book, as I have not compared this edition to other editions.



### IV. Course webpage

Quercus will house important course-related announcements, materials, and exam marks. I expect that you will check it a few times per week to ensure that you don't miss any important updates.

### V. Course requirements and grading

#### Midterm Examination I (27% of course grade)

Midterm Examination I will cover lecture and textbook materials from lectures 1-4 (see course schedule on the last page of this syllabus). Term tests dates and times are scheduled by the Office of the Registrar. You CANNOT take this exam at a different date/time (see Missed Term work policy in this syllabus).

#### Midterm Examination II (33% of course grade)

Midterm Examination II will cover lecture and textbook materials from lectures 5-8 (see course schedule). Term tests dates and times are scheduled by the Office of the Registrar. You CANNOT take this exam at a different date/time (see Missed Term work policy in this syllabus).

#### Final Examination (40% of course grade)

The Final Examination will cover lecture materials from lectures 1-11, textbook readings from lectures 9-11, and the two assigned journal articles (to be announced later in the course). Final exam dates and times are scheduled by the Office of the Registrar. You should NOT make travel plans until you learn the date of our final exam. You CANNOT take this exam at a different date/time (see Missed Term work policy in this syllabus).

#### Composition of all of the exams

All examinations will consist of both multiple-choice (MC) questions and short-answer (SA) questions.

Each MC question will have five options 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. MC questions will be drawn from both lecture and the textbook. MC questions must be answered using the Scantron form; answers indicated on the test booklet but not the Scantron form will not be scored.

SA questions will consist of multi-part questions that are broken down to help you structure your thinking. Each question will require a several sentence response, and may also require the creation or analysis of a visual (e.g., diagram). SA questions will be drawn from lecture only. SA questions will be weighted based on relative difficulty, as opposed to how many things you need to say (i.e., we will not employ a system of five points requiring five “things” to say).

On the whole, there will be more of a focus from lecture (approximately 3/4 of the points on the exam) than the textbook readings (approximately 1/4 of the points on the exam). For superior performance, you will need to develop a clear understanding of both the lectures and the readings. **Take note that rote memorization of lectures and the textbook will not ensure you a high mark**; rather, I expect you to not only learn what things are, but also why they are relevant, and how/why they are used, etc.

**To give you an opportunity to prepare for the examinations, practice questions will be made available for you after each course lecture.** These sample questions are an invaluable resource for multiple reasons, including (1) acclimating you to my testing style and expectations, and (2) giving you an opportunity to apply what you've

learned in a test-like structure. Please keep a look out for these on Quercus and please do connect with Prof. Souza or one of your TAs to discuss the answers after you've tried to work them out to receive feedback.

## **VI. Course policies**

### **Classroom conduct and participation**

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.

I work to create an interactive dynamic during my lectures that engages you to think and contribute. I challenge you to use this time to not only become familiar with the content we are discussing, but to also develop your critical thinking skills along with me.

### **Lecture slides**

For your convenience, lecture slides will usually be posted by 10PM the evening before a scheduled lecture. They will be posted in PDF format in two versions only (2 slides and 6 slides per page).

You should know that these lecture slides are not a suitable substitute for attending lecture. Lecture slides are not exhaustive and we will regularly cover important material that extends beyond them during lecture. You are responsible for this material with respect to testing.

**Instructional materials are only for the purpose of learning in this course and must not be distributed or used for any other reason whatsoever.**

### **Reading the textbook**

The material covered in the textbook is meant to reinforce and complement what we discuss in lecture. At times, we may overlap more with the textbook than at other times. In the spirit of promoting fair and transparent expectations, we will target your conceptual understanding of the bold face terms and figures. It is reasonable to assume that this is particularly important for such terms and figures that were not covered in lecture.

### **E-mail policy**

In most cases, e-mails will be answered within 48 hours of receipt (not including weekends). The email subject should include our course name and nature of the inquiry (i.e., "PSYB55: Question about the Dual Route theory"). The start of your email should include your full name and student ID number so that we know who you are. 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).

If you are not used to writing emails in an academic context, I encourage you to review this online resource so that you adopt proper email etiquette now and in the future: <<https://tinyurl.com/kysxwtx>>

### **Office hours**

You should consider visiting Prof. Souza's office hours if you would like to (1) discuss course content, (2) if you have an issue with course performance or progress, (3) contest a question on a midterm after having reviewed it with one of the teaching assistants, or (4) you would like to discuss the field of psychology/neuroscience and how to get more involved. With respect to Point 3, contesting a question must occur within two weeks of releasing the exam marks or it will not be considered.

Midterms will be viewable with the teaching assistants in person only, and will not be released outside of office hours under any circumstances. **You are NOT allowed to take notes or photographs of the exams and violation of this policy will be treated as academic misconduct, and will be handled accordingly.**

## 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 (e.g., reading an extra chapter the week before the midterm).

## 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 assistants 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 20 minutes or more, or (2) a student has already finished and submitted their exam, whichever occurs first. Students in this situation will not be allowed to write the exam and will receive a “0.”

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 portion of the exam will result in a zero for that portion of the exam.

## Missed Term Work due to Medical Illness or Other Emergency:

All students citing a documented reason for missed term work must submit their request for accommodations **within three (3) business days** of the deadline for the missed work.

Students must submit **BOTH** of the following:

1. A completed **Request for Missed Term Work Accommodations form** (<http://uoft.me/PSY-MTW>), and
2. **Appropriate documentation** to verify your illness or emergency, as described below.

### Appropriate documentation:

For missed **TERM TESTS** due to **ILLNESS**:

- Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with an **original** copy of the official UTSC Verification of Illness Form ([uoft.me/UTSC-Verification-Of-Illness-Form](http://uoft.me/UTSC-Verification-Of-Illness-Form)) or an **original** copy of the record of visitation to a hospital emergency room. Forms are to be completed in full, clearly indicating the start date, anticipated end date, and severity of illness. The physician’s registration number and business stamp are required.
- Note: If an end date of “ongoing” is specified, the medical note will be assumed to cover a period of two weeks. If no end date / an “unknown” end date is specified, the note will be assumed to cover a period of three business days (starting from the midterm date.)

For missed **TERM TESTS** due to **ACCESSABILITY REASONS**:

- Meet with your **AccessAbility consultant** and have them email Keely ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) detailing the accommodations required.

For missed **ASSIGNMENTS** due to **ILLNESS**:

- Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with a **hardcopy** of the Self-Declaration of Student Illness Form ([uoft.me/PSY-self-declare-form](http://uoft.me/PSY-self-declare-form)).

For missed **ASSIGNMENTS** due to **ACCESSABILITY REASONS**:

- If your desired accommodation is **within the scope** of your Accommodation Letter (ex. your letter includes “extensions of up to 7 days” and you need 3 days), submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>) and attach a copy of your letter. **Specify how many days extension you are requesting** on the request form.

- If your desired accommodation is **outside the scope** of your Accommodation Letter (ex. your letter includes “extensions of up to 7 days” but you need more time than that) you will need to meet with your **AccessAbility consultant** and have them email Keely ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) detailing the accommodations required.

For missed term tests or assignments in **OTHER CIRCUMSTANCES**:

Submit the Request for Missed Term Work Accommodations form (<http://uoft.me/PSY-MTW>), along with:

- In the case of a **death of a family member or friend**, please provide a copy of a death certificate.
- For U of T varsity-level or professional **athletic commitments**, an email from your coach or varsity administrator should be sent directly to Keely Hicks ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **well in advance** of the missed work, detailing the dates and nature of the commitment.
- For **religious accommodations**, please email ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **well in advance** of the missed work.
- For circumstances **outside of these guidelines**, please email Keely ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) on the date of the test / assignment deadline to describe your circumstances and ask what documentation would be appropriate

Documents covering the following situations are NOT acceptable: medical prescriptions, personal travel, weddings/personal/work commitments.

### **Procedure:**

Submit your (1.) [request form](#) and (2.) [medical/self-declaration](#)/other documents in person **WITHIN 3 BUSINESS DAYS** of the missed term test or assignment.

**Submit to:** Keely Hicks, Room SW420B, Monday – Friday, 9 AM – 4 PM. (Slide forms under door if out of office.)

After submitting your documentation, within approximately one to five business days, you will receive a response from your instructor detailing the accommodations to be made (if any).

**You are responsible for checking your official U of T email and Quercus course announcements daily, as accommodations may be time-critical.**

You should continue to work on your assignments to the best of your ability, as extension accommodations may be as short as one business day, depending on the nature of the illness/emergency.

If an accommodation has been granted but you are unable to meet the conditions of the accommodation (ex. you need a longer extension, or you missed a make-up test), you will need to repeat the missed term work procedure and submit additional forms to request further accommodation. Note that in the case of a missed make-up test, an opportunity to write a second make-up test may not be provided.

Completion of this form does NOT guarantee that accommodations will be made. The course instructor reserves the right to decide what accommodations (if any) will be made. Failure to adhere to any aspect of this policy may result in a denial of your request for accommodation.

### **Importance of Three Business Day window:**

If you are unable to submit your documents in-person within the three business day window, **you must email Keely** ([keely.hicks@utoronto.ca](mailto:keely.hicks@utoronto.ca)) **within the three business day window** to explain when you will be able to bring your documents in person. Exceptions to the documentation deadline will only be made under **exceptional circumstances**. Attach scans of your documentation, and be prepared to bring your documents to Keely in-person as soon as you are well. Late documents may not be accepted.

### **NOTE: Assignments due at end of term**

Instructors cannot accept term work any later than five business days after the last day of class. Beyond this date, you would need to file a petition with the Registrar's Office (<https://www.utoronto.ca/registrar/term-work>).

### **NOTE: Final Exams**

This policy applies only to missed assignments and term tests. Missed final exams are handled by the Registrar's Office (<http://www.utoronto.ca/registrar/missing-examination>).

### **AccessAbility**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the AccessAbility Services as soon as possible.

AccessAbility Services staff (located in Rm SW302, Science Wing) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations [416-287-7560](tel:416-287-7560) or email [ability@utoronto.ca](mailto:ability@utoronto.ca). The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

### **Academic Integrity**

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters

(<http://www.governingcouncil.utoronto.ca/Assets/Governing+Council+Digital+Assets/Policies/PDF/ppjun011995.pdf>) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement;
- Submitting your own work in more than one course without the permission of the instructor;
- Making up sources or facts;
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids;
- Looking at someone else's answers during an exam or test;
- Misrepresenting your identity; and
- When you knew or ought to have known you were doing it.

In academic work:

- Falsifying institutional documents or grades;
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes; and
- When you knew or ought to have known you were doing so.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If students have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, they are expected to seek out additional information on academic integrity from their instructors or from other institutional resources.

Note that you may see advertisements for services offering grammar help, essay editing and proof-reading. Be very careful. If these services take a draft of your work and significantly change the content and/or language, you may be committing an academic offence (unauthorized assistance) under the *Code of Behaviour on Academic Matters*.

It is much better and safer to take your draft to the Writing Centre as early as you can. They will give you guidance you can trust. Students for whom English is not their first language should go to the English Language Development Centre.

If you decide to use these services in spite of this caution, you must keep a draft of your work and any notes you made before you got help and be prepared to give it to your instructor on request.

## VII. Links you might find useful

UTSC Dates and Deadlines <https://www.utsc.utoronto.ca/registrar/dates-and-deadlines>

### Skill building, future planning

Academic Advising,

Career Centre

<http://www.utsc.utoronto.ca/aacc/>

Writing Services

<http://www.utsc.utoronto.ca/twc/>

Presentation Skills

<http://www.utsc.utoronto.ca/ctl/presentation-skills>

Co-op Program

<http://www.utsc.utoronto.ca/askcoop/>

### Your well-being

AccessAbility

<http://www.utsc.utoronto.ca/~ability/>

Health and Wellness

<http://www.utsc.utoronto.ca/hwc/>

Test anxiety

[https://www.anxietybc.com/sites/default/files/Test\\_Anxiety\\_Booklet.pdf](https://www.anxietybc.com/sites/default/files/Test_Anxiety_Booklet.pdf)

### The Department of Psychology

UTSC Psychology

<http://www.utsc.utoronto.ca/psych/>

UTSC Psychology courses

<http://www.utsc.utoronto.ca/psych/courses>

UTSC Experiential Learning

<http://www.utsc.utoronto.ca/psych/experiential-learning>

Psychology lab opportunities

<http://tinyurl.com/jjq25t7>

Psi Chi @ UTSC

<https://www.utsc.utoronto.ca/projects/psichi/>

## PSYB55: Course Schedule

May be subject to minor revisions with advance notice from the instructor

<b>Lecture</b>	<b>Week starting</b>	<b>Agenda for the day</b>	<b>Relevant details</b>
1	06-May	<b>Foundations of cognitive neuroscience</b>	<u>Textbook</u> : Chapter 1
2	13-May	<b>Neurotransmission and neuroanatomy</b> <i>Skills: Deconstructing short-answer questions</i>	<u>Textbook</u> : Chapter 2
3	20-May	<b>Methods in cognitive neuroscience</b> <i>Skills: designing experiments in cog neuro (I)</i>	<u>Textbook</u> : Chapter 3
4	27-May	<b>Perception</b> <i>Skills: designing experiments in cog neuro (II)</i>	<u>Textbook</u> : Chapter 5 (184-215)
-	TBD	<b>MIDTERM EXAMINATION I</b>	(see below)
5	03-Jun	<b>Object recognition</b> <i>Skills: Reading journal articles (the abstract)</i>	<u>Textbook</u> : Chapter 6
6	10-Jun	<b>Attention</b> <i>Skills: Reading journal articles (the introduction)</i>	<u>Textbook</u> : Chapter 7 (273-305)
	17-Jun	<b>READING WEEK</b>	-
7	24-Jun	<b>Action</b> <i>Skills: Reading journal articles (the methods)</i>	<u>Textbook</u> : Chapter 8 (327-66)
8	01-Jul	<b>Memory</b> <i>Skills: Reading journal articles (the results)</i>	<u>Textbook</u> : Chapter 9 (379-415)
-	TBD	<b>MIDTERM EXAMINATION II</b>	(see below)
	08-Jul	<b>NO CLASS</b> (study space for Midterm 2)	-
9	15-Jul	<b>Emotion</b> <i>Skills: Reading journal articles (the discussion)</i>	<u>Textbook</u> : Chapter 10 (425-59)
10	22-Jul	<b>Language</b>	<u>Textbook</u> : Chapter 11
11	29-Jul	<b>Cognitive Control</b> <b>Course review and conclusion</b>	<u>Textbook</u> : Chapter 12 (507-39)
-	TBD	<b><u>CUMULATIVE FINAL EXAMINATION</u></b>	(see below)

There are three examinations in this class, and the intended timing for each is indicated above. Midterm and Final exam dates/times are set by the Registrar's office and may occur later (but not earlier) than this timing.

**Midterm Examination 1** will cover lectures 1-4 and their associated textbook readings

**Midterm Examination 2** will cover lectures 5-8 and their associated textbook readings

**The Final** will cover lectures 1-11; the textbook readings from lectures 9-11 only; articles 1-2 (TBA)