

**CGSC 3501b**                      **Cognitive Neuroscience, Winter 2022**  
*content and format gratefully adapted with  
 permission from Dr. Olessia Jouravlev*

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### Course Hours and Locations

**UPDATE 20<sup>th</sup> December 2021: Given the uncertainty surrounding the ongoing pandemic, here are the two possible formats of the course.**

- 1) The course may be fully online (watch the pre-recorded lectures and then meet on Thursdays on Zoom for discussion).
- 2) Once the University reopens, we will shift to holding the Thursday meetings in person in class 8:35 am - 11:25 am **(St. Patrick's Building 100) Jan 10, 2022 - Apr 12, 2022**

The class will be in the blended format. We will meet either in person or on Zoom weekly on **Thursdays from 8:35 to 11:25**. Lectures will be pre-recorded and available for viewing one week before a scheduled meeting. **Please watch a lecture BEFORE our in-class meeting.** When we meet, we will (a) clarify any questions that you might have about the lecture content, (b) listen to presentations of papers done by students, (c) discuss assigned readings, and (d) complete brief weekly quizzes. In addition, there will be 3 summative tests administered during class time (see schedule below).

### Course Prerequisite(s)

Third-year standing and CGSC2001.

### Course Description: Goals and Objectives

This course explores the neurocognitive processes that support attention, memory, vision, hearing, motor control, language, and reasoning. It introduces basic neuroanatomy, neuroimaging, and behavioural measures of cognition and discusses brain development and evolution. Evidence from patients with neurological conditions (e.g., Alzheimer's disease, Parkinson's disease, amnesia, aphasia, etc.) and neurotypical human participants will be considered

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

- Describe key concepts, principles, and overarching themes relevant to cognitive neuroscience.
- Articulate the concepts and current states of knowledge in cognitive neuroscience.

- Engage in a critical scholarly discussion on a psychological topic using evidence to support claims.
- Critically evaluate the presentation of scientific ideas and research.
- Apply principles of cognitive neuroscience to the understanding of everyday problems.

## Text and Readings

### Required

- Selected journal articles. These will all be available through Brightspace. The readings are organized by week.

**Recommended (no need to purchase these texts, any of the information you need will be provided in lectures). For your general interest only.**

- American Psychological Association (2010). *Publication Manual of the American Psychological Association* (6<sup>th</sup> Edition). American Psychological Association. Washington, DC. Available from Indigo or amazon.ca. You can access the highlights of APA format at: <https://owl.english.purdue.edu/owl/resource/560/01/>
- Northey, M., & Timney, B. (2012). *Making sense in psychology: A student's guide to research and writing*. Don Mills, Canada: Oxford University Press.
- Strunk, W. (2007). *The elements of style*. Penguin. An excellent (short) book that gives good advice for writers. Available on Amazon or at the library

### Recommended for general background (any of)

- Newman, A. (2019). *Research methods for cognitive neuroscience*. Sage. This last text gives an excellent survey of (predominantly) neuroimaging methods for conducting cognitive neuroscience. It answers questions like what is fMRI, what does it measure, and what are common experimental designs used with this method? I will use this text for some lecture content, however you don't need to know anything from this book that doesn't make it into the lecture.
- Banich, M. T., & Compton, R. J. (2018). *Cognitive neuroscience*. Cambridge University Press.
  - Available at the bookstore \$68.26 on Amazon last time I checked
- Gazzaniga, M. S., Ivry, R. B., & Mangun, G. R. (2006). *Cognitive Neuroscience. The biology of the mind*,(2014).
  - Ebook available for \$84.50. <https://digital.wwnorton.com/cogneuro5>

## Course Web Page (Brightspace)

The course website is located at <https://carleton.ca/Brightspace/>

Here you will find the course outline, schedule, grading rubrics, assigned readings, and useful links.

We will use the discussion forum to post questions on assigned readings.

## Information for Students with Disabilities

Students with a disability who require academic accommodations should discuss these with me as soon as possible. As someone with a disability (I wear two hearing aids), I know how important it is to be set up to succeed in your academic work.

## Course Calendar and Evaluation Components

Week	Date	Topic	Assigned Reading	Quiz
1	13-Jan-22	Introduction	No Reading	
2	20-Jan-22	Nervous System	@Brightspace	
3	27-Jan-22	Methods of Cognitive Neuroscience	@Brightspace	
4	03-Feb-22	Sensorimotor System	@Brightspace	
5	10-Feb-22	Sensation and Perception: Vision	@Brightspace	
6	17-Feb-22	Object Recognition	@Brightspace	<b>Test 1: Weeks 1, 2, 3, 4, 5</b>
7	24-Feb-22	Winter Break	No Reading	
8	03-Mar-22	Hearing & Language	@Brightspace	
9	10-Mar-22	Memory & Learning	@Brightspace	
10	17-Mar-22	Attention, Consciousness, Executive Functioning	@Brightspace	<b>Test 2: Weeks 6, 8, 9</b>
11	24-Mar-22	Social Cognition	@Brightspace	
12	31-Mar-22	Emotions	@Brightspace	
13	07-Apr-22	Brain Development & Plasticity	@Brightspace	<b>Test 3: Weeks 10, 11, 12</b>

## Evaluation

Evaluation Components	Due Dates	Percent of Grade
1. Summative Tests (3 x 10)	See schedule above	30
2. Weekly Quizzes based on lecture (10)	ongoing	10
2. Brief weekly reaction papers	ongoing	10
3. Paper Presentation (Flash Talks)	ongoing	10
4. Paper Discussions	ongoing	10
5. Final Paper	28 April 2022	30

### Summative Tests

There are 3 summative tests that will be given as noted in the schedule. The test will cover content from the previous weeks (lectures, assigned readings, and flash talks). Each test is worth 10% of the final grade, and together the tests will account for 30% of the final grade. The tests will be given during our weekly meetings and will last 20 minutes. If you miss a test for any unapproved reason, you will not be able to make it up later. If you miss a test due to an approved absence from class, please get in touch with a TA to arrange for a make-up test.

The format of tests will be a combination of multiple-choice questions, fill the blanks questions, and short answers questions. Study guides accompanying lectures are provided at Brightspace to assist you in preparation for tests.

### Brief Weekly Quizzes

Brief quizzes will be given weekly during our meetings. **Each quiz will contain 5 questions to be completed within 3 minutes.** The quiz will be based on content of that week's lecture. There will be **11 quizzes (and a trial quiz administered during week 1)**. I will drop the lowest 1 of the 11 weekly quizzes. Each quiz is worth 1% of the final grade, and together these will account for 10% of the final grade. If you miss a quiz for any reason, you will not be able to make it up later. Study guides accompanying lectures are provided at Brightspace to assist you in preparation for quizzes.

### Brief Weekly Reaction Papers (2 pages)

Since writing is an excellent way to discover what you know, I will expect that each week you write a brief (2 page) reaction paper to the assigned readings. You may incorporate other readings as well, but the focus must be on the readings for that week. Your reaction papers should focus on similarities or differences between the readings, issues you noticed with the readings, or things you generally thought were well done or cool. A good strategy is to read each paper & make detailed margin notes as you go, then, while you have everything at your fingertips, outline your response with bullets, then write the draft. If something seems unclear, feel free to post about it on the forum & also note that it wasn't clear to you in your reaction paper (this is a fair response since I don't expect you to be an expert in all areas of cogneuro, and if something isn't clear, it's also just as likely to be the author's fault for writing too densely). Each reaction paper should be properly cited using and follow APA style. **Reaction papers can be uploaded on Brightspace by 11:59 PM the day before we meet for class.**

Reaction papers will generally receive a complete/incomplete grade. If your reaction paper is hastily completed or I get the sense you've just skimmed the abstract, you may receive a ½ mark or an "incomplete."

**If for any reason you need to skip a week, you may do so and simply email me and say you want to use your free week and the date.** You can do this once without penalty and without any explanation.

### Paper Presentation (Flash Talks)

Each student will make a brief presentation of **ONE empirical paper** that has not been assigned for reading to class. The papers will be assigned during the first week of classes. If you missed our first meeting, please contact Dr. Anderson to get a paper assigned to you.

You must read the assigned paper and present it in class. You will have FIVE minutes to present research described in the paper to class. Your presentation should have no more than 5 slides (e.g., slide 1 – explain a research question; slide 2 – describe the methods, slide 3(4) – describe the results, slide 5 – conclusions). At the end of your presentation, students will have TWO minutes to ask you questions.

Your presentation is worth 10% of your final grade. A grading rubric is available at Brightspace.

### Paper Discussions

Each weekly class will have an assigned reading. You are expected to read a paper before our weekly meeting and be ready to discuss it. The professor will lead discussions. Questions for discussions are available at Brightspace. To ensure that all students have a chance to participate in the discussion, the professor will ask all students to provide their responses in the chat window to 3 randomly selected discussion questions. Your responses will be visible to the Professor only.

After each class, your participation will be assessed on a three-point scale: *3 – Class engagement was sustained (3 or more substantive contributions to discussion); 2 – Class engagement was adequate (2 substantive contributions to discussion); 1 – Class engagement was minimal (1 substantive contribution to discussion); 0 – Did not participate in discussion/No evidence that you read the article/Absent.* Your final paper discussion grade will largely be based on an average of these scores. Grades are assigned weekly to provide timely feedback; one or two poor marks will not significantly damage a final participation grade.

The one absence rule means that I will drop the lowest 1 of the 11 weekly paper discussion marks. Students missing class for a legitimate reason and who wish to make up for missed class should arrange for a meeting with a TA to discuss assigned readings with a TA.

### Final Paper

The goal of the final paper is to get students read original research articles and make use of knowledge acquired in this class to discuss those papers critically. Students should read and critically review at least 5 articles that address a common topic, but use, at least, two different methods (e.g., patient studies & fMRI, fMRI & MEG, MEG & EEG, etc.). The list of topics will be available at Brightspace. When reviewing the papers, emphasize the ideas that are described and the experiments that led to these discoveries/claims. It would be best to have some continuity among the research you describe so you can develop the historical flow of ideas. It would also be preferable if you identified competing ideas/views and covered them in your final paper. **Your paper should not just be a list of findings from one paper after another but should instead be a discussion of concepts supported or refuted by evidence drawn from the papers you are citing.**

The paper will be a maximum of 10-pages (double-spaced). Your written work will be evaluated for content, style, grammar, spelling, and clarity -- the APA manual and Strunk & White will be helpful in this regard. Furthermore, APA format (i.e., the format for much of the work published in cognitive science journals, as specified by the American Psychological Association) will be required and assessed. All assignments and papers should be typed and double-spaced with 1-inch (2.54 cm) margins. Pages should be numbered consecutively, starting with the title page.

I recommend you write your paper in Google Docs and use Zotero to keep track of your references. Both these tools are free and using Zotero has the advantage that you can add citations to your document automatically in APA style.

I encourage you to request feedback from your classmates and give them feedback in turn. I suggest that they make comments (**not edits**) on your manuscript using the comment feature which you can address prior to handing in the paper for final submission. **In cases where you have requested feedback from classmates, each of you may receive bonus marks worth up to 5% of your grade for the paper for a) the quality of the suggestions on the original work, and b) how successfully you integrated those suggestions into your final draft.**

If you are having trouble locating papers on your research topic, I recommend you look at a website called Connected Papers (<https://www.connectedpapers.com/>). This website will use one paper you provide as a starting point and find relevant literature that is co-cited with the paper of interest. By reading the papers that form the graph connected to your paper of interest, you should get a good overview of your topic. You can also look at “prior works” and “derivative works” to get a sense of how your initial paper fits within the overall scientific narrative.

### **Late Papers and Missed Deadlines**

Grades will be penalized 5% per day that the assignment is late. If there are extenuating circumstances (e.g., illness), you will need to provide a self-report documentation. Contact me as soon as you know that you will not be able to meet the deadline to make alternative arrangements.

## REGULATIONS AND INFORMATION COMMON TO ALL COGNITIVE SCIENCE COURSES

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:

WDN = Withdrawn from the course

DEF = Deferred

### **Policies on COVID-19**

All members of the Carleton community are required to follow COVID-19 prevention measures and all mandatory public health requirements (e.g. wearing a mask, physical distancing, hand hygiene, respiratory and cough etiquette) and [mandatory self-screening](#) prior to coming to campus daily. If you feel ill or exhibit COVID-19 symptoms while on campus or in class, please leave campus immediately, self-isolate, and complete the mandatory [symptom reporting tool](#). For purposes of contact tracing, attendance will be recorded in all classes and labs. Participants can check in using posted QR codes through the cuScreen platform where provided. Students who do not have a smartphone will be required to complete a paper process as indicated on the [COVID-19 website](#). All members of the Carleton community are required to follow guidelines regarding safe movement and seating on campus (e.g. directional arrows, designated entrances and exits, designated seats that maintain physical distancing). In order to avoid congestion, allow all previous occupants to fully vacate a classroom before entering. No food or drinks are permitted in any classrooms or labs. For the most recent information about Carleton's COVID-19 response and required measures, please see the [University's COVID-19 webpage](#) and review the [Frequently Asked Questions \(FAQs\)](#). Should you have additional questions after reviewing, please contact [covidinfo@carleton.ca](mailto:covidinfo@carleton.ca). Please note that failure to comply with University policies and mandatory public health requirements, and endangering the safety of others are considered misconduct under the [Student Rights and Responsibilities Policy](#). Failure to comply with Carleton's COVID-19 procedures may lead to supplementary action involving Campus Safety and/or Student Affairs.

### ***Request for academic accommodation***

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

### **Pregnancy obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf)

**Religious obligation**

Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [carleton.ca/equity/wp-content/uploads/Student-Guide-to-AcademicAccommodation.pdf](http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-AcademicAccommodation.pdf)

**Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made.  
[carleton.ca/pmc](http://carleton.ca/pmc)

**Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and its survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: [carleton.ca/sexualviolence-support](http://carleton.ca/sexualviolence-support)

**Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist.

<https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](http://students.carleton.ca/course-outline)

**Copyright policy**

Student or professor materials created for this course (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the author(s). They are intended for personal use and may not be reproduced or redistributed without prior written consent of the author(s). The PowerPoint presentations, lecture videos, lectures notes, and other materials available to you on Brightspace may not be distributed online.

**Resources (Carleton University: 613-520-2600)**

Department of Cognitive Science (ext. 2522) <a href="https://carleton.ca/cognitivescience/">https://carleton.ca/cognitivescience/</a>	2201 DT (Dunton Tower) <a href="mailto:cogsci@carleton.ca">cogsci@carleton.ca</a>
Registrar's Office (ext. 3500) <a href="https://carleton.ca/registrar/">https://carleton.ca/registrar/</a>	300 Tory <a href="mailto:registrar@carleton.ca">registrar@carleton.ca</a>
Student Academic and Career Development Services (ext. 7850) <a href="https://carleton.ca/career/for-facultystaff/how-can-you-support-careerdevelopment/">https://carleton.ca/career/for-facultystaff/how-can-you-support-careerdevelopment/</a>	302 Tory <a href="mailto:career@carleton.ca">career@carleton.ca</a>
Paul Menton Centre (ext. 6608) <a href="https://carleton.ca/pmc/">https://carleton.ca/pmc/</a>	501 University Centre <a href="mailto:PMC@Carleton.ca">PMC@Carleton.ca</a>
Writing Tutorial Service (ext. 1125) <a href="https://carleton.ca/csas/writing-services/">https://carleton.ca/csas/writing-services/</a>	4th floor Library <a href="mailto:csas@carleton.ca">csas@carleton.ca</a>
Learning Support Services (ext. 1125) <a href="https://carleton.ca/csas/learning-support/">https://carleton.ca/csas/learning-support/</a>	4th floor Library <a href="mailto:csas@carleton.ca">csas@carleton.ca</a>

**Academic advising**

During the fall term 2021, please contact undergraduate and graduate advisors by e-mail.

Undergraduate advisor:

- Melissa Lett: [melissa.lett@carleton.ca](mailto:melissa.lett@carleton.ca)

Graduate advisor:

- Uzma Khan: [uzma.khan@carleton.ca](mailto:uzma.khan@carleton.ca)

Advisors can answer questions concerning:

- Course selection and meeting program requirements
- Your audit and transfer credits
- Gaining access to courses that are closed
- Information concerning prerequisites and preclusions
- Course equivalencies and substitutions
- Information about whether to pursue the (Honours Project Course) or the Thesis stream and CGPA requirements
- Community Practicum Course
- Concentrations
- Exchanges and course selection

## Important Information

- Students must always retain a hard copy of all work that is submitted.
  - All final grades are subject to the Dean's approval.
  - For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting <https://carleton.ca/its/>.
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**For a list of dates and deadlines, including holidays and exam dates, please visit:**

<https://carleton.ca/registrar/registration/dates/academic-dates/>