

CGSC 2002 (A): *Methods in Cognitive Science*
Course Outline
Fall 2024

Note: Dr. Nadiya Slobodenyuk designed this course and all materials and retains copyright. She has kindly permitted me to reuse her content.

Instructor Information

Instructor:	Dr. John Anderson
Office:	DT 2202A
E-mail:	johnanderson3@cunet.carleton.ca
Office Hours:	In person: 1:00 – 2:00 pm on Wednesday and by appointment on other days

1. Course Overview & Objectives:

The course aims to provide students with an overview of methods and approaches in cognitive science and equip them with tools to think critically about research. It reviews selected methods from experimental psychology, cognitive neuroscience, philosophy of mind, linguistics, evolutionary cognitive science, and artificial intelligence. We will also discuss principles of ethical research conduct and open science practices.

The labs for this course allow students to learn to evaluate the suitability of a given methodology, practice designing scientific experiments, and analyze the data.

Prerequisite(s): CGSC 1001 or FYSM 1607, second-year standing, or permission of the Department. Restricted to students enrolled in B.Cog.Sc. General or Honours.

2. Student Learning Outcomes:

By the end of the course, you will:

1. Gain factual knowledge about some research methods in cognitive science
2. Gain subject matter expertise

You will also be able to:

3. analyze from the methodological standpoint and critically evaluate empirical research

4. apply your knowledge of research methods to design experiments for various disciplines in cognitive science
5. conduct some statistical analyses using SPSS or JASP

3. Course Structure:

This is a lecture course with a lab component. Both lectures and labs are held synchronously and in person. 4. Schedule (see next page):

September 2024							October 2024							November 2024							December 2024							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1	2	3	4	5	6	7			1	2	3	4	5							1	2	1	2	3	4	5	6	7
8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	
22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	
29	30						27	28	29	30	31			24	25	26	27	28	29	30	29	30	31					

Date	Day	Week	Lecture Topics	Labs
4-Sep	Wednesday	Week 1	Introduction to CGSC 2002	NA
06-Sep	Friday		Introduction to research methods - What is a model?	
11-Sep	Wednesday	Week 2	Research Methods - Research design - Sampling - Quantitative methods - Descriptive and inferential statistics	Research Design & Statistics
13-Sep	Friday			
18-Sep	Wednesday	Week 3	Research Methods - Qualitative methods - Case Study: Sensory substitution	Research Design & Statistics
20-Sep	Friday			
25-Sep	Wednesday	Week 4	Quiz 1 preparation	Statistics
27-Sep	Friday		Quiz 1 (in class; one page of hand written notes is allowed)	
01-Oct	Wednesday	Week 5	Cognitive Psychology: - Direct / indirect measures of cognitive processes - Models of information processing and reaction time - Case Study: Sense of agency and body ownership	Qualitative Methods & Statistics
04-Oct	Friday			
09-Oct	Wednesday	Week 6	Linguistics - Experimental methods in cognitive linguistics - Case Study: - Music and language: a resource sharing framework	Cognitive Psychology
11-Oct	Friday			
16-Oct	Wednesday	Week 7	Neuroscience - Overview of brain imaging techniques. - Methodological and conceptual issues in brain imaging - ERP analysis	Linguistics
18-Oct	Friday			
23-Oct	Fall break no classes or labs			
25-Oct	Fall break no classes or labs			
30-Oct	Wednesday	Week 9	Artificial Intelligence - Research methods in AI - Machine learning	Neuroscience
01-Nov	Friday			
06-Nov	Wednesday	Week 10	Quiz 2 (in class; one page of hand written notes is allowed) Philosophy of Mind: - Thought experiments: benefits and limitations - Experimental philosophy	AI
08-Nov	Friday			
13-Nov	Wednesday	Week 11	Evolutionary Approach - Experimental methods in evolutionary cognitive science - Case study: Evolution of musicality	Philosophy of mind
15-Nov	Friday			
20-Nov	Wednesday	Week 12	Comparative Approach - Comparative methodology and the study of cognition	Evolutionary approach & comparative cognitive science
22-Nov	Friday			
27-Nov	Wednesday	Week 13	Ethics in research: - Ethical considerations in research with human subjects - Algorithm ethics Good and bad research practices	Ethics
29-Nov	Friday			
04-Dec	Wednesday	Week 14	Quiz 3 (in class; one page of hand written notes is allowed)	Ethics & Good and bad research practices

The duration of a weekly lab is 2 to 2.5 hours.

Section	Time	Room
CGSC 2002 – A2	2:35 pm - 5:25 pm on Monday	2311 RB
CGSC 2002 – A3	11:35 am – 2:35 pm on Monday	2311 RB

5. Text & Resources:

There is no textbook for this course, which is both bad news and good news... This means you will need to read original research and take notes during our lecture classes. The readings will be assigned on a weekly basis and will be available on the course Brightspace webpage. Lecture slides and slides from tutorials will also be available on Brightspace.

6. Assessment:

Assessment type	Description	%
Quiz 1: 18 % points Quiz 2: 18 % points Quiz 3: 15 % points	In class; one page of handwritten notes is allowed	51
Labs (12 labs x 4% points)	In person. You are required to attend the labs and finish the lab assignment during the lab time. There are no alternative ways of earning lab credit.	48
Mid-semester reflection	Mid-semester reflection	1
Course total		100

7. Technical and Attendance Requirements for Labs:

- ***Attendance:***

There are 12 lab classes in this course; attendance of lab classes is mandatory. At the end of each lab class, you are required to submit your lab worksheet. You will receive a mark for your lab worksheet and lab participation. You may not submit your lab worksheet distantly (i.e. without being present in class) or after the class is over. Late worksheets and worksheets submitted distantly will receive a mark of zero. There are no alternative ways of earning lab credit other than attending the lab class and completing the work in class.

- ***Technical requirements:***

You will need to use two pieces of software in your labs: SPSS and Weka. The software will be installed on lab computers. However, if you want to use your personal computer, you will need to install the software. You do not need to purchase the software. You can use Carleton's subscription. The course TA will contact you with instructions at the beginning of the term.

8. Important Dates

Last day for registration and course changes (including auditing) in full fall, late fall and fall/winter courses.	September 19
Last day to withdraw from full fall and fall/winter courses with a full fee adjustment. Withdrawals after this date will	September 30
result in a permanent notation of WDN on the official transcript.	
The last day for academic withdrawal for Fall courses.	November 15

9. Class Policies:

- **Attendance**

Regular class attendance is required.

- **Extra credit**

There is no extra credit in this course. Your final grade is a result of your performance on course assignments.

- **Communication**

I will be available for any questions, feedback, and help with the course material over the email throughout the week. I usually reply promptly and will certainly reply within two business days. I might not be able to reply during the weekend.

Office hours are held 1) in person: 1:30 – 2:30 pm on Wednesday and by appointment on other days, 2) over zoom: by appointment.

You can also post questions on our course Discord channel. I will check the course discord channel at least once a day.

Note that I will respond only to e-mail sent from your official Carleton University e-mail account containing your full name.

If you do not have or have yet to activate your Carleton account, you may wish to do so by visiting <http://carleton.ca/ccs/students/>

Outside the classroom, e-mail is the main means of communication in this course. You will receive regular updates and reminders on your e-mail. It is your responsibility to check your e-mail daily.

- **Missed classes**

If you miss a class, please consult your classmates and ask for their notes.

- **Marking**

Students have the right to see their marked work.

- **Carleton grading system**

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 = 73-76	C - = 60-62
A = 85-89	B - = 70-72	D+ = 57-59

- 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

Please contact the undergraduate advisor by e-mail to schedule an appointment. Undergraduate advisor:
Tarra Mason-Ward: TarraMasonWard@cunet.carleton.ca

- **Plagiarism**

The University Academic Integrity Policy defines plagiarism as “presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one’s own.” This includes reproducing or paraphrasing portions of someone else’s published or unpublished material, regardless of the source, and presenting these as one’s own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/ software, material on the internet and/or conversations.

Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else, including the unauthorized use of generative AI tools (e.g., ChatGPT);
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another’s data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one’s own; and
- failing to acknowledge sources through the use of proper citations when using another’s work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course’s instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of “F” for the course.

- **Statement on Student Mental Health**

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. Here is a list that may be helpful:

- **Emergency Resources (on and off campus):**
<https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

Carleton Resources:

- Mental Health and Wellbeing: <https://carleton.ca/wellness/>
- Health & Counselling Services: <https://carleton.ca/health/>
- Paul Menton Centre: <https://carleton.ca/pmc/>
- Academic Advising Centre (AAC): <https://carleton.ca/academicadvising/>
- Centre for Student Academic Support (CSAS): <https://carleton.ca/csas/>
- Equity & Inclusivity Communities: <https://carleton.ca/equity/>

Off Campus Resources:

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, <https://www.dcottawa.on.ca/>
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, <http://www.crisisline.ca/>
- Empower Me: 1-844-741-6389, <https://students.carleton.ca/services/empower-me-counselling-services/>
- Good2Talk: 1-866-925-5454, <https://good2talk.ca/>
- The Walk-In Counselling Clinic: <https://walkincounselling.com>

- **Requests for Academic Accommodations**

If you are missing assignments / test and having difficulties meeting the expectations set for this course due to reasons outside of your control, please communicate with me in a timely manner so that I can come up with the best solution for your situation.

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes, including information about the Academic Consideration Policy for Students in Medical and Other Extenuating Circumstances, are outlined on the Academic Accommodations website (students.carleton.ca/course-outline).

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

Pregnancy obligation: Write to me 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 accommodation regarding a formally- scheduled final exam, you must complete the Pregnancy Accommodation Form: <https://carleton.ca/equity/contact/form-pregnancy-accommodation/>

Religious obligation: Write to me 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: <https://carleton.ca/FASS-FPA-teaching-regulations/accommodation/>

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

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 where 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: <https://carleton.ca/equity/sexual-assault-support-services>

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 will be provided to students who compete or perform at the national or international level. Write to me 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>

- **Important Information**

- Students must always retain a hard copy of all work that is submitted.

-Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean

- 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 <http://carleton.ca/ccs/students/>

- November 15, 2024: Last day for academic withdrawal from full fall and late fall classes

- March 15, 2025: Last day for academic withdrawal from full winter, late winter and fall/winter courses.

For a list of dates and deadlines, including holidays and exam dates, please visit:

<https://calendar.carleton.ca/academicyear/>