

**CGSC 2002 (B): Methods in Cognitive Science****Course Outline****Winter 2024****Class Information**

Dates:	Wednesday and Friday
Time:	10:05 am - 11:25 am
Course type:	In person

**Instructor Information**

Instructor:	<b>Dr. Nadiya Slobodenyuk</b>
Office:	DT 2207
Phone:	613-520-2600 x 4210
E-mail:	NadiyaSlobodenyuk@cunet.carleton.ca
Office Hours:	In person: 1:00 – 2:30 pm on Wednesday and by appointment on other days Over zoom: by appointment

**1. Course Overview & Objectives:**

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

The labs for this course provide students with an opportunity to learn to evaluate the suitability of a given methodology, practice designing scientific experiments and analyzing 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. programs.

**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

### 3. Course Structure:

This is a lecture course with a lab component. Both lectures and labs are held synchronously and in person.

### 4. Schedule:

#### Week 1

Lecture dates	Lecture Topics	Labs
January 10 January 12	Introduction to CGSC 2002 <b>Research Methods:</b> - Research design	-----

#### Week 2

Lecture dates	Lecture Topics	Lab
January 17 January 19	<b>Research Methods:</b> - Quantitative methods - Descriptive and inferential statistics	Research Design & Statistics

#### Week 3

Lecture dates	Lecture Topics	Labs
January 24 January 26	<b>Research Methods:</b> - Qualitative methods <b>Case study:</b> Sensory substitution Quiz 1 review and preparation	Research Design & Statistics

#### Week 4

Lecture dates	Lecture Topics	Lab
<b>January 31</b> February 2	<b>Quiz 1</b> <b>(in class; one page of handwritten notes is allowed)</b> <b>Cognitive Psychology:</b> - Direct / indirect measures of cognitive processes <b>Case study:</b> Sense of agency and body ownership	Statistics

#### Week 5

Lecture dates	Lecture Topics	Labs
February 7 February 9	<b>Linguistics:</b> - Experimental methods in cognitive linguistics <b>Case study:</b> Music and language: A resource sharing framework	Cognitive & Statistics

#### Week 6

Lecture dates	Lecture Topics	Lab
February 14 February 16	<b>Neuroscience:</b> - Overview of brain imaging techniques - Methodological and conceptual issues in brain imaging - ERPs analysis	Linguistics & Statistics

#### Week 7

Lecture dates	Lecture Topics	Labs
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<b>February 21</b> <b>February 23</b>	<b>Winter break. No classes</b>	-----
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**Week 8**

Lecture dates	Lecture Topics	Lab
February 28 March 1	<b>Artificial Intelligence:</b> - Research methods in AI - Machine learning	Neuroscience & Statistics

**Week 9**

Lecture dates	Lecture Topics	Labs
<b>March 6</b> March 8	<b>Quiz 2</b> <b>(in class; one page of handwritten notes is allowed)</b> <b>Philosophy of Mind:</b> - Thought experiments: benefits and limitations	AI

**Week 10**

Lecture dates	Lecture Topics	Lab
March 13 March 15	<b>Evolutionary Approach:</b> - Experimental methods in evolutionary cognitive science <b>Case study:</b> Evolution of musicality	Philosophy of mind

**Week 11**

Lecture dates	Lecture Topics	Labs
March 20 March 22	<b>Comparative Approach:</b> - Comparative methodology and the study of cognition <b>Ethics in research</b> - Ethical considerations in research with human subjects	Evolutionary approach

**Week 12**

Lecture dates	Lecture Topics	Lab
March 27	<b>Ethics in research</b> - Algorithm ethics	-----
<b>March 29</b>	<b>No classes.</b>	

**Week 13**

Lecture dates	Lecture Topics	Labs
April 3 April 5	<b>Good and bad research practices</b> Quiz 3 review and preparation	Ethics

**Week 14**

Lecture dates	Lecture Topics	Lab
<b>April 10</b>	<b>Quiz 3</b> <b>(in class; one page of handwritten notes is allowed)</b>	-----

**This course consists of synchronous in person lectures and weekly synchronous in person labs. The duration of a weekly lab is 2 to 2.5 hours.**

Section	Time
CGSC 2002 – B1	11:35 am - 2:00 pm on Friday
CGSC 2002 – B2	2:35 pm - 5:00 pm on Tuesday
CGSC 2002 – B3	11:35 am - 2:00 pm on Monday

### **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. The assigned readings will be available to you on the course Brightspace webpage. Lecture slides and slides from tutorials will be available on Brightspace as well.

### **6. Assessment:**

Assessment type	Description	%
Quiz 1: 20 % points Quiz 2: 20 % points Quiz 3: 15 % points	In class; one page of handwritten notes is allowed	55
Labs (11 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.	44
Mid-semester reflection	Mid-semester reflection	1
<b>Course total</b>		<b>100</b>

### **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. 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.

**Any work marked by the TAs is subject**

- **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
A - = 80-84	C+ = 67-69	D = 53-56
B+ = 77-79	C = 63-66	D - = 50-52

F Failure. No academic credit

ABS Absent from the final examination

DEF Official deferral (see "Petitions to Defer")

FND "Failed, no Deferral" – assigned when the student is absent from the final exam and has failed the course on the basis of inadequate term work as specified in the course outline.

Standing in a course is determined by the course instructor, subject to the approval of the Chair and Faculty Dean.

All final grades are subject to the Dean's approval.

- **Makeup policy**

If health-related or unforeseeable personal circumstances prevent you from taking a test, you are expected to inform me ahead of time or on the same day. Any supporting documents must be presented in a timely manner as well. You will be given a chance to retake the missed exams at a time agreed upon with the instructor.

If you receive zero for cheating or plagiarism on one of the assignments or an exam, you will NOT be given a second chance to fix your grade.

- **Learning support services**

Centre for Student Academic Support and Student Academic & Career Development Services offer a variety of services designed to support student learning. For example, they offer group study rooms, free drop-in sessions with study skills specialists and writing tutors, free academic skills workshops, networked computers, a tutor referral service, and supportive peer helpers. Visit their websites for more information:

<https://carleton.ca/csas/>

<https://carleton.ca/sacds/>

- ***Petitions to defer***

Students unable to complete a final term paper or write a final examination because of illness or other circumstances beyond their control or whose performance on an examination has been impaired by such circumstances may apply within five working days to the Registrar's Office for permission to extend a term paper deadline or to write a deferred examination. The request must be fully and specifically supported by a medical certificate or other relevant documentation. Only deferral petitions submitted to the Registrar's Office will be considered.

- ***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 and Carleton's Media Space may not be distributed online.**

- ***Academic advising***

Visit the Cognitive Science Undergraduate Office, DT 2208 to discuss your program. 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

Please contact undergraduate and graduate advisers by e-mail to schedule an appointment.

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)

- ***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 acknowledgment;
- 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.**

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](mailto: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 23, 2023: Last day for academic withdrawal from full fall and late fall classes

- March 15, 2024: Last day for academic withdrawal from full winter, late winter and fall/winter courses.

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

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