

DEPARTMENT OF LINGUISTICS AND LANGUAGES  
COGNITIVE NEUROLINGUISTICS LABORATORY  
LINGUIST 4NN3 / COGSCIL 6NN3 (3 units)

**Basics**

Instructors:	Dr. Phoebe Gaston <a href="mailto:gastonp@mcmaster.ca">gastonp@mcmaster.ca</a>  Dr. Fareeha Rana (Instructional Assistant) <a href="mailto:ranafs@mcmaster.ca">ranafs@mcmaster.ca</a>
Term:	Winter 2024
Seminars:	Wednesdays 12:30-2:20 pm ETB 230
Lab sessions:	times to be chosen via sign-up sheet on Avenue ARiEAL (L.R. Wilson 4 <sup>th</sup> floor)
Co-working:	times to be chosen via sign-up sheet on Avenue location TBA
Modality:	in person, unless otherwise specified
Office hours:	Wednesdays 4-5 pm (or by appt as needed) TSH 511A

**Learning Outcomes**

- Explain methods used and key findings in the cognitive neuroscience of language
- Demonstrate conceptual grasp of the principles underlying electrophysiological recording and ERP analysis
- Participate & assist in EEG data collection sessions
- Execute a basic preprocessing and analysis pipeline for EEG data
- Read & evaluate scientific papers that apply EEG or related methods to investigate linguistic questions
- Propose and refine language-related hypotheses that can be tested using methods and approaches from cognitive neuroscience
- Practice discipline-specific writing as well as providing, receiving, and acting on constructive feedback

## Format

- Seminars
  - 13 weeks x 1 hr 50 min
  - Mix of lecture, discussion, hands-on activities
  - We'll take a short break in the middle of each class
  - Laptop needed for most hands-on activities (please me know ASAP if this poses a problem)
- Lab sessions
  - Hands-on EEG data collection
  - 1 session required before winter recess, 1 required after winter recess
  - 2.5 hrs/session
  - Led by Dr. Rana, but I will drop in
  - Sign-up for timeslots to occur in seminar/on Avenue
  - Available roles: participant (i.e., experiment subject), assistant 1, assistant 2
    - Must serve at least once as an assistant
  - Corresponding assigned activity to be submitted after each session
  - 1 additional session required for graduate students
- Co-working
  - Optional in-person time and space to be provided for collaborative work on lab assignments and/or additional consultation with instructor
  - Scheduling to be addressed in seminar/on Avenue

## Seminar Schedule (subject to change)

*CNL = cognitive neuroscience of language*

*EEG = electroencephalography*

*ERP = event-related potential*

Date	Planned topic
Jan 10	Structure of the course & research workflow
Jan 17	Electrophysiology & EEG
Jan 24	ERP analysis & components
Jan 31	Methods & questions in CNL
Feb 7	Important findings in CNL
Feb 14	Experimental design
Feb 21	NO CLASS
Feb 28	Preprocessing / Analysis / Visualization
March 6	Preprocessing / Analysis / Visualization
March 13	Preprocessing / Analysis / Visualization
March 20	Preprocessing / Analysis / Visualization
March 27	TBA
April 3	TBA
April 10	Student presentations

## Assignments

*To be posted and submitted on Avenue to Learn*

- Lab assignments
  - Primarily walking you through EEG data preprocessing, analysis, and visualization, using existing datasets & MATLAB toolboxes
  - Some completed in seminar and others on your own (or during co-working time)
- Readings
  - Primarily scientific journal articles
  - You will be asked to set up a Zotero (reference manager) library to which you will add assigned readings
  - Submit annotated copy of the reading & a screenshot of the Zotero entry containing a summary note
  - Guidelines to be provided for annotation and summary
  - If you have an established workflow in another reference management software, you can let me know and we can establish an equivalent submission standard
  - You will be asked to sign up for one 5-min presentation of an assigned reading
- Final paper/project
  - Specifics to be covered in seminar and posted on Avenue
  - You will be assigned “writing chunks”/sub-sections throughout the term that will help you build toward the final product
  - For each of these component assignments, you will bring a draft to seminar and provide/receive peer feedback. You will then revise in response to this feedback, and submit the revision with changes tracked.
  - Short presentation during final seminar meeting
  - Presentation at Student Research Day (April 11<sup>th</sup>, 2024)
    - More details to be provided later in term
    - Required for graduate students, encouraged for undergraduates

## Evaluation

- 30% - lab assignments (mix of in-class and take-home)
- 20% - annotation & presentation of assigned readings
- 20% - participation in hands-on lab sessions (attendance & submission of related activity)
- 30% - final project (including staged submissions throughout the term as well as providing and responding to peer feedback)

Extra credit:

- + 0.5% for each weekly feedback questionnaire you submit via Avenue
- up to + 2.0% for experiment participation via SONA participant pool (1.0% per 1 hr of participation)

## Policies & Procedures

*Please see “Approved Advisory Statements” and the policy on Generative AI in the official course outline. The policies below are in addition.*

- Attendance & engagement
  - You are expected to attend class unless there is an extenuating circumstance (e.g., see Illness policy below). Please let me know ahead of time or as soon as possible if you need to miss class.
  - Attendance is not graded directly (except for EEG data collection sessions), but there will be many in-class assignments that will be affected by your absence.
  - While laptops/tablets will be used for in-class activities and can be used for note-taking, you are expected to remain engaged in the class and avoid becoming distracted by other activities on your screen.
- Communication
  - If you have a question whose answer might benefit other students, please consider posting it to the discussion board on Avenue and I will answer it there. Otherwise, questions or logistical issues can be sent via email, with 4NN3 in the subject line. Messages sent in the evening or over the weekend will likely not be seen until the following workday.
- Office hours
  - If you have a conflict or cannot be on campus in person, email to arrange another time or a Zoom meeting.
- Late work
  - Most assignments will build on previous work and thus it is in your interest to complete them on time. However, life happens. If you need to turn an assignment in late, email me as soon as possible and let me know when you will turn it in. We will then discuss how this impacts your ability to receive feedback and complete subsequent assignments, and reach agreement about next steps. Your grade will not be impacted and you do not need to provide a reason for turning the assignment in late. I reserve the right to alter this policy if necessary (not with respect to specific students or assignments, but at the class level).
- Illness & masks
  - Wearing masks in seminar and during co-working times is encouraged but not required.
  - Wearing masks in lab sessions is **required** due to the small space and sustained contact. You may bring your own (surgical or N95-equivalent, please) or we will provide to you.
  - To prevent the spread of communicable illness, and to protect your own health, I strongly encourage you **not** to attend in-person seminars, lab sessions, or co-working times when you are ill. Instead, when you are well enough to do so, contact me to discuss a plan for making up the material.
- Accommodations
  - Even if you are not registered with Student Accessibility Services, please do not hesitate to discuss needed accommodations with me. You will not be asked to disclose personal/health information to justify the need for these accommodations.
- Availability of upcoming assignments

- By default, assignments will be posted on Avenue 1-2 weeks in advance, to help maintain flexibility in response to the progress we make in each seminar.
- You are always welcome to email me to ask about assignments for weeks that have not yet been posted, if for example you are anticipating a particularly demanding week of the term and would like to work ahead.