



McGILL UNIVERSITY
Faculty of Medicine; School of Communication Sciences & Disorders
Winter 2023

SCSD-638
Neurolinguistics
Number of Credits: 3 Credits
Course Time: Thursdays, 2:15 pm – 4:15 pm
Location: Rm 869

Instructor: Karsten Steinhauer, PhD
Office Hours: By appointment (please set up by email)
Email: karsten.steinhauer@mcgill.ca

COURSE OVERVIEW: Current theories of language are studied: brain relationships and speech and language deficits subsequent to brain damage. A review of current research on phonetic, lexical, and syntactic processing in brain-damaged individuals is included. This course builds on material covered in SCSD-624 (Language Processes) and provides a foundation for issues introduced in SCSD-644 (Applied Neurolinguistics).

LEARNING OBJECTIVES

ROLE 1: CENTRAL ROLE/CONTENT EXPERT

Foundational Principles	
Apply basic knowledge of biomedical, cognitive, linguistic, and socio-behavioural sciences relevant to human communication processes, including knowledge of their acoustic, biological, cultural/linguistic, and neurological bases.	
Draw, point out and describe the functional anatomy of brain structures and circuits/networks underlying speech, language and related cognitive domains.	Neuroanatomy Lectures + exercises; Quiz # 1; Final Exam
Apply specialized knowledge of differences and disorders of human communication, including knowledge in each of the following areas: speech, communication modalities, cognitive and social aspects of communication, language, and literacy.	
Identify, describe and compare different etiologies of acquired language disorders, resulting symptoms, and relevant predictors for recovery.	Lectures; Group presentations; Final Exam
Differentially contrast 8 types of aphasia in terms of symptoms/impairments and underlying brain damage according to the classical taxonomy (based on Wernicke-Lichtheim-Geschwind model).	Lectures; Final Exam
Assessment	
Develop an assessment strategy to evaluate communication.	
Identify the major aspects of speech and language to include in an assessment to differentially diagnose acquired language disorders.	Lectures; BDAE exercise; Final Exam

Include relevant information from other sources.	
Identify sections from the patient's chart and information from evaluations completed by other professionals that can inform etiology, symptoms, and prognosis.	Lectures; Final Exam
Population-based Programs	
Administer screening programs.	
Administer the BDAE to a classmate and analyze the data.	BDAE exercise + report / EPA

ROLE 2: COMMUNICATOR

Oral and written communication	
Provide relevant information.	
Provide an adequate level of details and highlight remaining questions and controversial elements that can generate a discussion.	Group presentations and discussions
Listen actively.	
Listen actively to the presentations and come up with questions during the discussion period.	Group presentations and discussions

ROLE 3: COLLABORATOR

Collaboration with other professionals	
Interact according to differing roles and responsibilities of team members.	
Collaborate effectively with other team members, participate equally in the work, and support positive team dynamics.	Group presentations and discussions

ROLE 5: SCHOLAR

Evidence-informed practice	
Appraise research and other evidence critically in order to address client, service or practice questions.	
Explain limitations of the classical profiles and taxonomy based on the Wernicke-Lichtheim-Geschwind-model with reference to more recent neurolinguistic research and models.	Lectures; Group presentations and discussions; Final Exam
Integrate relevant evidence into service provision.	
Identify benefits, implications and impact on service provision related to novel approaches to evaluation and treatment.	Lectures; Group presentations and discussions; Final Exam
Facilitation of the learning of others	
Share knowledge related to communication.	
Provide an overview of novel neurolinguistics models and approaches to acquired language disorders assessment and treatment.	Group presentations and discussions

Note: ROLE 4: ADVOCATE, ROLE 6: MANAGER and ROLE 7: PROFESSIONAL are not specifically targeted in this class.

INSTRUCTIONAL METHOD

This course consists of lectures/seminars, practical activities/exercises, as well as some assignments. Most content will be presented via in-person lectures, presentations, and a lab session. At least one guest lecture will be presented interactively via Zoom. Other contents (lectures or 'content modules') will be made available as pre-recorded lectures in *myCourses*.

REQUIRED COURSE MATERIALS

All book chapters, papers, pdf versions of Power Point presentations, and video recordings will be made available on *myCourses* (or via links). There is no textbook that you would need to order.

COURSE CONTENT

The lectures will present:

- Neuroanatomy and theoretical frameworks relevant to acquired language disorders;
- Clinical and functional characteristics of these disorders;
- Associated perceptual, cognitive and psychosocial factors which impact on communication.

Course Structure:

	Date	Topics	Other Activities
1	January 05	Course overview and brief history of aphasiology	
2	January 12	Neuroanatomy I <i>Guest lecture by Dr Mikaela Stiver</i> (via Zoom) https://mcgill.zoom.us/j/83019514482?pwd=MzFzVEhXcGM5YWE0QkFhUWJZQlNyUT09 Meeting ID: 830 1951 4482 Passcode: 742803	Pick up lab coats etc. for next week; Chapters + Modules in <i>myCourses</i>
3	January 19 Strathcona Anatomy Building !	Neuroanatomy II – Lab Session <i>Guest lecture by Mr Zaid Al-Azzawi (+ Dr Stiver)</i> Strathcona building, Room 1/56 (Histology Lab)	Complete Doodle for Presentations; Topics Assigned
4	January 26	Neurological disorders and their mechanisms	
5	February 02	2:15 pm: 45-min Quiz (Classes 1-4) 3:15 pm: Introduction to aphasia – Part 1	
6	February 09	Introduction to aphasia – Part 2 (BDAE assignment + EPA, due March 09th)	Presentation 1: Neuroplasticity
7	February 16	Disorders of phonology and articulation	Pres 2: Apraxia of speech
8	February 23	Disorders of semantics and word retrieval	Pres 3: Embodied cognition
	March 02	READING WEEK – NO CLASS	Submit your BDAE report by Thur, Mar 9th

9	March 09	Disorders of morphology and syntax	Pres 4: Music therapy
10	March 16	Disorders of written word recognition and production	Pres 5: TMS and tDCS
11	March 23	BDAE discussion	
12	March 30	Disorders of discourse and pragmatics <i>Guest Lecturer: Deirdre Truesdale</i>	Pres 6: Bilingual aphasia
13	April 06	Traumatic brain injury and dementia	Pres 7: PPA
	April 14 -28 (Date TBC)	Final Exam: 2-hour 'closed books' in-class exam.	See also below (Page 6)

ASSIGNMENTS AND EVALUATION:

Assignment	Date	Sub Roles Targeted	Expected Performance Level
45-min Quiz 20%	Feb. 02	Foundational principles (focus on lectures 1-4)	Advanced beginner
Active participation in class 10%	Throughout the semester	Oral and written communication; Collaboration with other professionals	Proficient
BDAE-3 exercise + report / EPA 20%	Report and Data due on Mar 09 th	Assessment; Technical Skills 1.4: Clinical expert 1.2f+g	Advanced beginner
Group Presentation 25%	Feb. 09 – Apr. 06	Foundational principles; Oral and written communication; Collaboration with other professionals; Evidence-informed practice; Facilitation of the learning of others	Advanced beginner
Final Exam in class 25%	Date to be confirmed	Foundational principles; Assessments; Evidence-informed practice; Facilitation of the learning of others (focus: all lectures + student presentations)	Advanced beginner

Quiz

The **in-class 45-min Quiz** will be completed during the **first hour on February 02nd** (2:15 to 3:00 pm) It will focus on all contents from classes 1-4, especially on neurological disorders and their mechanisms and neuroanatomy (lectures 2, 3, 4). It will include 'multiple-choice' questions, short answers (a few words or a sentence), and short essay questions (5-10 lines). You may have to draw and/or label brain structures. The Quiz counts for **20%** of the final grade.

Active Participation

Active participation is based on completion of required readings, involvement in lectures and activities, and questions asked following other students' presentations. It counts for **10%** of the final grade.

BDAE-3 Exercise and written Report + data entry (in groups of 3-4 students) – due March 09th.

BDAE-3 = *Boston Diagnostic Aphasia Examination, Short version 3*. This exercise will be assigned and be explained in more detail in Class # 6 (Feb 09th). In groups of three (default) or four (if need be), you will complete a speech and language evaluation with the other members of your group (with changing roles) to **practice the administration of one of the most common English Aphasia test batteries (BDAE-3, short version)**. In previous years (i.e., before the coronavirus pandemic), this exercise involved administering the BDAE to a healthy older adult (70 years old or older) that students had never met. Instead, your task is to test each other (2 testers and one 'client') and to potential challenges during a 'real' BDAE administration with older people and aphasics. You should familiarize yourselves with the original (printed) BDAE test version (available in the **Resource Room**) and its procedures. When testing group members, you can either use the **printed version or a pdf version** (on a computer or to create your own print out). The pdf version will be provided during our course. Based on your knowledge of different types of aphasia at the point of this exercise, as a 'client' you can try to imitate a possible style of behaviour that may be expected from a given 'real' client with a language disorder and see what kind of challenges might result in comparison to a young healthy 'client' such as yourselves. Note that during a usual administration of the BDAE, you would record the entire session with a voice recorder and later transcribe the recordings to complete/update all parts of the BDAE. In our exercise/simulation, you can use Zoom (or similar) to record the session.

Based on this exercise, each group (of 3-4 students) will **write a short report (2-3 pages, 1.5 spaced, 2.5 cm margins, 11 or 12 font size)** to characterize your client/participant and describe your experience while collecting the data. Describe any challenge that you faced and what you have learned through this assignment. You should also **enter one data set in a form** that I will make available to you. **Students are responsible for completing the final report and entering their data by March 09th** (Thursday after reading week). Please send a copy of your report to karsten.steinhauer@mcgill.ca with the names of all group members. Enter your BDAE data on the shared electronic spreadsheet (the link will be provided later during the semester). This assignment is worth **20%** of the final grade.

Note: This assignment is also linked to an EPA (Entrustable Professional Activity) with PASS/FAIL assessment (details will be provided on Feb 09).

Group Presentation

You will form 7 groups of 4-5 students. Each group will select (via Doodle, 'first come-first serve') one topic relevant to this course and prepare **a 15-minute 'in-class' presentation using Power Point**. The presentation will be followed by a 5-minute discussion. All presenting students must be involved in both the preparation and the presentation (3-4 minutes per student). One or more core readings will be made available on *MyCourses*, but you are strongly encouraged to search the literature for additional information that should be integrated in the presentation. The presentation will take place during the first 20 minutes of a given class.

The presentation should give your peers a good overview of the topic and paper(s) and should highlight interesting or controversial points that can be addressed during the 5-minute discussion period. Be prepared to ask questions that can initiate a discussion (which can be included on your slides).

Please submit a **copy of any additional research articles at least one week before your presentation**, so I can post it on *MyCourses*. All students are expected to read the paper(s) related to each topic before class and to be prepared to ask questions at the end of the presentation. **Please submit a copy of the Power Point file (and a pdf with 6 slides per page!) at least 24 hours before your presentation.** Submit all material by email to karsten.steinhauer@mcgill.ca.

A good presentation is characterized by a focus on the main points (background, research questions, methods, findings, conclusion), an efficient introduction of remaining questions or controversial points, clarity, structure, efficient use of the Power Point support, and appropriate time considerations. The presentation counts for **25%** of the final grade.

Topics for presentations

1. February 09 Neuroplasticity
2. February 16 Apraxia of speech
3. February 23 Embodied cognition
4. March 09 Music therapy in aphasia
5. March 16 Transcranial Magnetic and Direct Current Stimulation (TMS, tDCS)
6. March 30 Bilingual aphasia
7. April 06 Primary Progressive Aphasia (PPA)

Final Exam

The '**closed-book**' **in-class Final Exam** will take place on one day during McGill's exam period (date TBD) and last for 2 hours. You will be allowed to use your class notes, slides, and readings ('open book' format).

The final exam will cover the topics presented **in all classes**, but with a main focus on lectures 5 to 13. The content of **students' presentations** will also be part of the final exam. It may include multiple choice questions, short answers (a few words or a sentence), short essay questions (5-10 lines), and longer questions. You may be asked to draw and/or label brain structures, processing models, or other illustrations relevant to neurolinguistics. The Final Exam counts for **25%** of the final grade.

McGILL POLICY STATEMENTS:

Academic Integrity

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/) for more information).

Language of Submission

*In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. **If you plan to submit your written work in French, please let me know 1 week in advance** (email to karsten.steinhauer@mcgill.ca).*

ADDITIONAL STATEMENTS:

STUDENTS WITH DISABILITES

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the [Office for Students with Disabilities](#), 514-398-6009.