

Ling 210 – Introduction to Speech Sciences – Fall 2026

Syllabus

Time: Tuesday and Thursday, 11:35 am-12:55 pm

Instructor: Dr. Marcelo Vieira

Office Hours: Thursday at 2 pm or by appointment (online or in-person)

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Office Hours: TBA

Course Description

The course covers key concepts of speech science, including phonetics (acoustics, speech perception and production), fundamentals in the study of speech processing, speech development, and speech disorders, and introduces some basic methodologies of the field. Students will participate in hands-on activities.

Materials

Readings for lectures will be from the textbook or available to download. They will be some excerpts from other books as well as some primary source material. Although, highly recommended, they are not mandatory. No content **exclusively** available in the reading texts will be required during evaluations.

Ball, M.J., & Joan Rahilly (2014). *Phonetics: The Science of Speech* (1st ed.). Routledge. [Full Access here.](#)

Campbell, Lyle. *Historical Linguistics: An Introduction*, Edinburgh: Edinburgh University Press, 2020. [Access here.](#)

Goldenberg, G. (2014). Apraxia - the cognitive side of motor control. *Cortex; a Journal Devoted to the Study of the Nervous System and Behavior*, 57, 270–274. [Access here.](#)

Gussenhoven, C. (2004). *The Phonology of Tone and Intonation*. Cambridge: Cambridge University Press. Link: [Full Access Here](#).

Hillis, A. E. (2007). Aphasia. *Neurology*, 69 (2), 200-213. [Access here](#).

Hock, Hans Henrich and Joseph, Brian D.. *Language History, Language Change, and Language Relationship: An Introduction to Historical and Comparative Linguistics*, Berlin, Boston: De Gruyter Mouton, 2019. [Access here](#).

Johnson, K. (2012). *Acoustic and Auditory Phonetics (Third Edition)*. Cambridge, Massachusetts: Wiley-Blackwell. Link: [Access here \(Online reading or partial download\)](#).

Kent et al. 1999. Acoustic Studies of Dysarthric Speech: Methods, Progress, And Potential. *J Commun Disord* 32. 141-186. [Access here](#).

Kent, 2000. Research on speech motor control and its disorders: a review and prospective. *J Commun Disord*. 391-427; quiz 428. [Access here](#).

Ladefoged, P., & Disner, S. F. (2012). *Vowels and consonants* (3rd ed). Wiley-Blackwell. [Access here \(Only 60 pages for download\)](#)

Peterson, R. L., & Pennington, B. F. (2015). Developmental dyslexia. *Annual Review of Clinical Psychology*, 11, 283–307. [Access here](#).

Traxler, M. J., & Gernsbacher, M. A. (2006). *Handbook of psycholinguistics* (Second edition). Elsevier/Academic Press. [Access here](#).

Additional Materials (NOT MANDATORY)

Students will be provided with two types of documents to auto-evaluate their knowledge.

1 – What should I know (WSIK): This document consists of short questions to be answered as concisely as possible without gaps in the reasoning. They highlight the main concepts to grasp from a given set of lectures. **WSIKs have no key answers, because the goal is to identify gaps in the understanding to be addressed in Office Hours (or by email if it is a short question).**

2 – Pre-exam: This document consists of questions to prepare the students for the exam. Note, however, that the questions are not identical or not necessarily similar to those in the actual exam. They target topics relevant to the exams either through the required answer or through the question statement itself. Pre-exams have key answers and are usually released some days before the exam (but after the pre-exam release).

McGill Policy on 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/integrity for more information).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/).

Right to Submit Written Work in English or French

In accord with McGill University's Charter of Student's Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté.

Email

Please use email to contact the instructor and TA and include LING 210 in the subject line. We will try to respond within one or two business days. Students often find that the discussions on the MyCourses website helpful for getting questions answered by other students, but this may not be monitored by the instructor.

Copyright

Instructor-generated course materials (e.g., slides, handouts, conference materials, assignments, quizzes, exam questions, answer keys, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

Generative AI

During any assessment or evaluated task, students are **NOT** allowed to use generative artificial intelligence for any purpose except for **Grammar checking in case of assignment submission. IN THIS CASE, STUDENTS MUST PROVIDE THE ORIGINAL TEXT (WITHOUT CORRECTION) FOLLOWED BY THE ONE PROVIDED BY THE AI**

TOOL UNDER THE FOLLOWING PROMPT: “Check the grammar of the text without changing the structure or the content”. **THE LINK OF THIS SPECIFIC INTERACTION WITH AI MUST BE SHARED (INSERT IN YOUR DOCUMENT).** So, make sure that you start a new chat only for that.

It is also your responsibility to fact check anything that the AI system tells you during your studies.

Exams

The exam will be essay questions.

For all questions, the answer you provide on the exam must be your own and written in your own words. Near identical answers will be treated as probable cases of scholastic dishonesty and will be reported to the Office of the Dean of Students.

Additional questions **may** be included in the exams (they will be indicated as extra questions). In this case, if a better score is achieved for those questions, they will progressively replace questions with lower global score (i.e., the score for the whole question, not for specific items in the question). Therefore, there will be no score greater than the maximum agreed (without the extra questions) for each exam.

Int. to Speech Sciences – LING 210 TENTATIVE SCHEDULE				
		MAIN CONCEPTS AND TRANSCRIPTION		
STUDENTS ARE EXPECTED TO COMPLETE A BASIC PRAAT TUTORIAL ON THEIR OWN BY SEPT 24TH				
01/09/2026	Lecture 1	Introduction to Linguistics and Language Variety: Language and Speech, Grammar, Science and Philosophy of Language, different fields and approaches.	Ladefoged & Disner (2012), chap. 1.	
03/09/2026	Lecture 2	Phonetics and Phonology, gradience, categorization, derivational processes and motor implementation.	Traxler & Gernsbacher (2006), chap. 2.	
08/09/2026	Lecture 3	Phonetics and Phonology: Prosody & Pragmatics	Gussenhoeven (2004), chap. 1, chap. 5.	
10/09/2026	Lecture 4	Articulatory Phonetics: IPA, sound description and transcription 1: Articulatory basis of vowel and consonant production.	Ladefoged & Disner (2012), chap. 4; chap. 6. Ball & Rahilly (2013), chap. 8.	
15/09/2026	Lecture 5	Articulatory Phonetics: IPA, sound description and transcription 2: Manner of Articulation and Place of Articulation		
17/09/2026	Lecture 6	Articulatory Phonetics: IPA, sound description and transcription 3: Non-pulmonic sounds (Ejectives, Implosives and Clicks)	Ladefoged & Disner (2012), chap. 13; Ball & Rahilly (2013), chap. 4.	
22/09/2026	Lecture 7	Articulatory Phonetics: dealing with sound and linguistic variance	Hock & Joseph (2019), chap. 4. Campbell (2020), chap. 2	Assignment 1 (Part 1): in-class
24/09/2026	Lecture 8	Introduction to Acoustic Phonetics: basic acoustic concepts; Source and Filter Theory	Johnson (2012), chap. 1. Ball & Rahilly (2013), chap. 9.	
		APPLYING CONCEPTS AND TOOLS IN SPEECH PRODUCTION ANALYSES		
29/09/2026	Lecture 9	Introduction to Computational Tools to analyze speech 1: FFT, spectrum and spectrogram	Johnson (2012), chap. 1, chap.2., chap. 3.	Assignment 1 (Part 2) submission (homework)
01/10/2026	Lecture 10	Formants and the main acoustic features of vowels	Johnson (2012), chap.2.	
06/10/2026	Lecture 11	Anti-formants and the main acoustic features of nasals and laterals.	Johnson (2012), chap. 9.	
08/10/2026	Lecture 12	VOT, Formant transition, burst: main acoustic features of stops	Johnson (2012), chap. 8.	

READING WEEK				
15/10/2026	Lecture 13	Spectrum balance, COG, and main acoustic features of fricatives	Johnson (2012), chap. 7.	
20/10/2026	Lecture 14	Analyzing pathological speech: centralization, spirantization	Kent et al. (1999); Thompson-Ward & Theodoros. Chapter 4: Acoustic Analysis of Dysarthria. In Murdoch . Dysarthria (1998)	Assignment 2: in-class
22/10/2026	Lecture 15	Voice and Intonation 1	Gussenhoeven (2004), chap. 2, chap. 4.	
29/10/2026	Lecture 16	Voice and Intonation 2	Ball & Rahilly (2013), chap. 6.	
03/11/2026	Lecture 17	Introduction to Computational Tools to analyze speech 2: f0 detection, jitter, shimmer and HNR.	Boersma, P. Chapter 17: Acoustic Analysis. In Podesva & Sharma (2014)	
05/11/2026	Lecture 18	Studying Intonation and dysphonia		Assignment 3: in-class
		SPEECH PERCEPTION AND SPEECH PROCESSING		
10/11/2026	Lecture 19	Phonetic lack of invariance, speech perception and language categories: the sound, the percept, the system.	Jonhson (2012), chap. 4, chap. 5; Ladefoged & Disner (2012), chap. 10.	
12/11/2026	Lecture 20	Speech acquisition and Infant Speech Perception	Traxler & Gernsbacher (2006), chap. 27, section 1-4.	
17/11/2026	Lecture 21	Lexical access and contextual cues supporting prediction	Traxler & Gernsbacher (2006), chap. 8.	
19/11/2026	Lecture 22	How does the brain segment speech?		
24/11/2026	Lecture 23	How does hearing guide speech articulatory processing: auditory feedback and auditory targets	Ball & Rahilly (2013), chap. 10-11. Traxler & Gernsbacher (2006), chap. 6-7.	Assignment 4: submission (homework)
		A BRIEF DISCUSSION ABOUT LANGUAGE AND SPEECH DISORDERS		
26/11/2026	Lecture 24	Articulatory disorders: dysarthria, dysphonia, stuttering, and ataxia	Goldenberg (2014); Kent (2000)	
01/12/2026	Lecture 25	Language disorders and Reading disorders: Aphasia and Dyslexia	Peterson & Pennington (2015); Hillis (2007).	Time-limited Quiz at home (2 attempts)
04/12/2026	Deadline to submit Quiz			
		FINAL EXAM	The whole content (open questions)	

Assessment		
Assignment 1 (Part 1)	10%	
Assignment 1 (Part 2)	10%	
Assignment 2	15%	
Assignment 3	10%	
Assignment 4	15%	
Quiz	10%	
Final Exam	30%	

TO KNOW MORE
Bowen, L. K., Hands, G. L., Pradhan, S., & Stepp, C. E. (2013). Effects of Parkinson's Disease on Fundamental Frequency Variability in Running Speech. <i>Journal of Medical Speech-Language Pathology</i> , 21(3), 235–244.
Ferrand, C. T. (2002). Harmonics-to-noise ratio: an index of vocal aging. <i>Journal of Voice</i> , 16(4), 480-487.
Fujii S, Wan CY. The Role of Rhythm in Speech and Language Rehabilitation: The SEP Hypothesis. <i>Front Hum Neurosci</i> . 2014 Oct 13;8:777. doi: 10.3389/fnhum.2014.00777. PMID: 25352796; PMCID: PMC4195275.
Gelfer, M. P., & Young, S. R. (1997). Comparisons of intensity measures and their stability in male and female speakers. <i>Journal of Voice: Official Journal of the Voice Foundation</i> , 11(2), 178–186.
Gorham-Rowan, M. M., & Laures-Gore, J. (2006). Acoustic-perceptual correlates of voice quality in elderly men and women. <i>Journal of communication disorders</i> , 39(3), 171-184.
Holmes, R. J., Oates, J. M., Phyland, D. J., & Hughes, A. J. (2000). Voice characteristics in the progression of Parkinson's disease. <i>International Journal of Language & Communication Disorders</i> , 35(3), 407–418.
Linville, S. E. (2002). Source characteristics of aged voice assessed from long-term average spectra. <i>Journal of Voice</i> , 16(4), 472-479.
Lopes, L. W., Cavalcante, D. P., & Costa, P. O. D. (2014, October). Severity of voice disorders: integration of perceptual and acoustic data in dysphonic patients. In <i>Codas</i> (Vol. 26, No. 5, pp. 382-388). Sociedade Brasileira de Fonoaudiologia.
Oguz, H., Munir, D., Mustafa A., S., Necmi, A., Ahmet, I., & Selda, K. (2007). Effects of unilateral vocal cord paralysis on objective voice measures obtained by Praat. <i>Eur Arch Otorhinolaryngol</i> , 264, 257–261.
Speaks, Charles E. <i>Introduction to Sound: Acoustics for the Hearing and Speech Sciences</i> , Plural Publishing, Incorporated, 2017.