

Class time: T, Th 9:30 a.m. -10:50 a.m., Cresap 101

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COURSE DESCRIPTION: This course covers topics in acoustic phonetics and speech perception. In the first half of the course, the acoustic theory of speech production is introduced and the acoustic correlates of speech sounds are presented. We also cover acoustic-phonetic features of connected speech. In the second half of the course, we turn our attention to the perception of speech signals. We address such topics as phonetic categorization, speech perception and linguistic experience, and the role of speech perception in phonology.

REGISTRATION REQUIREMENTS: Ling 350 and Ling 450-1, or permission of the instructor.

TEACHING METHOD: Lecture, discussion, presentations, laboratory work

COURSE REQUIREMENTS AND GRADING:

3 Individual lab assignments (Lab 1 = 5%, Labs 2 and 3 = 10% each)	25%
2 Homework assignments (10% each)	20%
Quiz	20%
1 Group lab project	15%
Final paper	20%

Active class participation is essential in the second half of the quarter (preparation and presentation of papers). It will not be graded unless there is notable trouble in this area in which case up to 5% will be subtracted from the final paper grade

CLASS MATERIALS (REQUIRED):

Johnson, Keith (1997) *Acoustic and Auditory Phonetics*, Blackwell Publishers.
 Paperback: 232 pages
 Publisher: Wiley-Blackwell; 3 edition (August 15, 2011)
 ISBN-10: 1405194669
 ISBN-13: 978-1405194662

Additional text book resources for acoustic and auditory phonetics:

- Ladefoged, Peter (1996) *Elements of Acoustic Phonetics*. 2nd Edition. The University of Chicago Press.
- Rosen, Stuart and Howell, Peter (1991) *Signals and Systems for Speech and Hearing*. Academic Press.
- Stevens, Kenneth (1998) *Acoustic Phonetics*. MIT Press
- Moore, Brian C. J. (1989) *An Introduction to the Psychology of Hearing*. 5th Edition. Elsevier Press

Tentative list of supplemental readings (may change as we go along...):Vowel spaces:

1. Peterson, G. E. & Barney, H.L. (1952). Control methods used in a study of the vowels. *Journal of the Acoustical Society of America*, 24, 175-184.
2. Liljencrants, J. & Lindblom, B. (1972). Numerical simulation of vowel quality systems: The role of perceptual contrast. *Language*, 48(4): 839-862.
3. Weirich, M. & Adrian Simpson, J. (2013). Investigating the relationship between average speaker fundamental frequency and acoustic vowel space size, *Journal of the Acoustical Society of America*, 134, 2965-2974.

Voicing categories:

4. Lisker, L. and Abramson, A. (1964). A cross-language study of voicing in initial stops: Acoustical measurements. *Word*, 20, 384-422.
5. Allen, J. S., Miller, J. L., & DeSteno, D. (2003). Individual talker differences in voice-onset-time. *Journal of the Acoustical Society of America*, 113, 544-552.
6. Beckman, J., Helgason, P., McMurray, R., & Ringen, C. (2010). Rate Effects on Swedish VOT: Evidence for Phonological Overspecification. *Journal of Phonetics*.

Connected speech/Coarticulation:

7. Stevens, K. & House, A. (1963). Perturbation of vowel articulations by consonantal context: An acoustical study. *Journal of Speech and Hearing Research* 6, 111-128.
8. White, L., & Turk, A.E. (2010). English words on the Procrustean bed: Polysyllabic shortening reconsidered. *Journal of Phonetics*, 38, 459-471.

Categorization/Categorical Perception:

9. Liberman, A.M., Harris, K. S., Hoffman, H.S. & Griffith, B. C. (1957). The discrimination of speech sounds within and across phoneme boundaries. *Journal of Experimental Psychology*, 54, 358-368.
10. Ganong, W.F. (1980). Phonetic categorization in auditory word perception. *Journal of Experimental Psychology: Human Perception and Performance*, 6, 110-125.
11. K. Miyawaki, W. Strange, R. Verbrugge, A.M. Liberman, J.J. Jenkins, and O. Fujimura (1975). An effect of linguistic experience: The discrimination of [r] and [l] by native speakers of Japanese and English. *Perception & Psychophysics* 18, 331-340.

Speech Perception: Beyond phoneme-level perception – Talker variability

12. Ladefoged, P. and Broadbent, D. E. (1957). Information conveyed by vowels. *Journal of the Acoustical Society of America*, 29, 98-104.
13. Nygaard, L. C., Sommers, M. S., and Pisoni, D. B. (1994). Speech perception as a talker-contingent process. *Psychological Science*, 5, 42-46.
14. Cutler, Anne, and Andics, Attila, & Fang, Zhou. (2011). Inter-dependent categorization of voices and segments. *Proceedings of the XVIIth International Congress of Phonetic Sci.*, Hong Kong, Pp 552-555.

Speech Perception and production Development:

15. Werker, J. F. and Tees, R. C. (1984) Cross-language speech perception: Evidence from perceptual reorganization during the first year of life. *Infant Behavior and Development*, 7, 49-63.
16. Polka, L., Colantonio, C. & Sundara, M. (2001). "A cross-language comparison of /d/ -/ð/ perception: Evidence for a new developmental pattern." *Journal of Acoustical Society of America*, 109, 2190-2220.
17. Hazan, V. & Barrett, S. The development of phonemic categorization in children aged 6-12. (2000) *Journal of Phonetics*, 28, 377-396.

Schedule (subject to change)

Week	Date	Topic	Work Due	Reading
1	4/1	Introduction Basics (acoustics, filters, audition)		Johnson, chaps 1, 4
	4/3			
2	4/8	Digital Signal Processing	Lab 1: Recording Speech	Johnson, chap 3
	4/10	Acoustic Theory of Speech Production	HW 1: Basic Acoustics	Johnson, chap 2
3	4/15	Vowels (including Praat formant measurement)		Johnson, chap 6
	4/17		HW 2a: Acoustic Theory of Speech Production	
4	4/22	Consonants	HW 2b: Acoustic Theory of Speech Production	Johnson, chaps 7, 8, 9
	4/24	Vowel space practicum	Lab 2: Vowel Spaces (due Friday, 4/25)	
5	4/29	Vowel spaces		Articles 1, 2, 3
	5/1	Catch-up and review		
6	5/6	Quiz 1: Acoustic Phonetics (in Cresap 101 at the usual class time)		
	5/8	Connected speech practicum		
7	5/13	Voice Onset Time (VOT)		Articles 4, 5, 6
	5/15	Lab 4 planning	Lab 3: Voicing Categories	Articles 7, 8
8	5/20	Categorization/Categorical Perception		Articles 9, 10 or 11
	5/22	Speech Perception: Beyond phonemes – Talker Variability	Lab 4 progress report and further planning	Articles 12, 13, 14
9	5/27	Speech Perception: Development	Final paper: 1 page abstract/plan	Articles 15, 16, 17
	5/29	Papers (In-class practicum)		
Final paper due – Tuesday, June 10 th				