

University of Florida
Program in Linguistics
4131 Turlington

LIN 6226/2247 Advanced Phonetics
Monday Period 8-10th (3:00-6:00)
UST 0105

Professor: Ratre P. Wayland, Ph.D.

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Office Hours: T 1:45-2:35 & R 12:55- 1:45 or by appointment

The goal of this course is to introduce students to theoretical issues in phonetics especially those related to second language acquisition, phonology, speech perception and production etc. as well as to phonetic techniques that will enable students to conduct experiments in these areas.

1. Text books

Required:

1. Reetz, Henning and Jongman, Allard. Phonetics: Transcription, Production, Acoustics, and Perception. Wiley-Blackwell Publisher, 2009 (HJ)
2. Selected journal articles.

Recommended:

1. Ladefoged, P. (2003). Phonetic Data Analysis: An Introduction to Fieldwork and Instrumental Techniques. Blackwell Publishing.

Others

1. Rosen, S. and Howell, P. (1991). Signals and systems for speech and hearing. Academic press.
2. Kent, R. and read, C. (1992). The Acoustic analysis of speech. Singular Publishing Group, Inc.
3. Borden, G., Harris, K., and Raphael, L. (1994). Speech Science Primer. Third Edition.
4. Johnson, Keith. (1997). Acoustic and auditory phonetics. Blackwell Publishers, Inc.
5. Lieberman, P. and Blumstein, S. 1988. Speech Physiology, speech perception and acoustics phonetics. Cambridge University Press.
6. Stevens, K. (1999). Acoustic Phonetics. The MIT Press.
7. Fry, D. The physics of speech. (1979). Cambridge University Press.

2. Course Requirements

All students are required to attend class. Quizzes will be taken in class and may or may not take up the entire period. Homework will be due at the beginning of class. Ten points will be subtracted per day for everyday that the homework is late up to three days. Homework handed in the fourth day after the due date (or later) will be given a grade of 0. It is the student's responsibility to get notes, handouts, and any other information from any missed classes. Make-up tests/quizzes are possible only if you provide documentation of illness or if you have received advance approval to take a make-up test/quiz.

3. Assessment by percentage of course grade

Class participation and exhibition of having read reading assignments	10%
Homeworks	25 %
Mid-term exam	20%
Presentation of selected paper	25%
Final project	20%

4. The Final Research Project involves designing an experiment on speech production (e.g., acoustic description of speech sounds) and/or speech perception. Your paper should include a clear rationale for the project making reference to the appropriate literature. The data should be analyzed using appropriate statistical procedures. The paper should be no more than 15-20 pages.

5. Lab component

The PRAAT software available for downloading from <http://www.fon.hum.uva.nl/praat/> will be used for your final project.

6. Grading: 95-100 = A 90-94.9 = A- 87-90.9 = B+
83-86.9 = B 79-82.9 = B-, 75-78.9 = C+
71-74.9 = C 67-70.9 = C- 63-66.9 = D+
59-62.9 = D 55-58.9 = D- Below 55 = E

Information on current UF grading policies for assigning grade points can be found at <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>.

Date	Topic	Reading assignment	Quiz/Homework
1/7	Intro; Review: Acoustics: wave characteristics		
1/14	loudness & pitch, quality, resonances of the vocal tract, spectrograms	HJ Ch. 7, A1	

	Speech analysis: -Tape recording techniques - Interpreting spectrograms - Measuring formant frequencies on spectrograms		
1/21			Labor day. No class
1/28	Speech analysis: - Computer implemented procedure - Fourier analysis - Auto correlation - LPC (linear predictive coding) analysis. -Measurement pitch and intensity	HJ Ch. 8, A5	HW1
2/4	Acoustic characteristics of speech: vowels & consonants, Phonation types.	HJ 10	HW2
2/11	Speech production: - Source-filter theory of speech production - Production of vowels and consonants - Measurement techniques	HJ Ch 9, A7	
2/18	Speech perception: consonants - categorical perception - trading relation Etc.	HJ Ch. 12	Mid-term exam
2/25	Speech perception: - effects of contexts & rates - vowels	HJ Ch. 13, B10	
3/4	Neural encoding of speech: - duplex perception - McGurk effects - Non-speech analog	B11	HW3
3/11	Speech perception in: - infants & Animals	C20	
3/18	Speech perception in: - infants & Animals	B13	
3/25	Cross-linguistics speech perception	D21	HW4

4/1	Theories in speech perception: - Motor theory - Direct realist - Psychoacoustic	B8	
4/8	Theories in speech perception: - NLM - PAM	??	HW5
4/15	Production & Perception		
4/22	- Final project presentation		Final project due

Reading list

A. Acoustic characteristics of speech (speech production)

A1. Sawusch, J. (2005). Acoustic Analysis and Synthesis of speech. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 7-27. London: Blackwell Publishing.

A3. Peterson, G. E. and Barney, H. L. (1952). Control methods used in a study of vowels. *Journal of the Acoustical Society of America*, 24, 175-184.

A4. Steven, K. and Blumstein, S. (1978). "Invariant cues for place of articulation in stop consonants". *Journal of the Acoustical Society of America*, 64(5), 1358-1368.

A5. Sussman, H.; MaCaffrey, H.; Matthew, S. (1991). An investigation of locus equations as a source of relational invariance for stop place categorization. *Journal of the Acoustical Society of America*, 90 (3), 1309-1325.

A6. Raphael, L. J. (2005). Acoustic cues to the perception of segmental phonemes. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 182-206. London: Blackwell Publishing.

A7. Johnson, K. (2005). Speaker normalization in speech perception. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 363-389. London: Blackwell Publishing.

B. Speech perception theories

B8. Liberman, A. and Mattingly, Ignacius. (1985). The motor theory of speech perception revised. *Cognition*, 21, 1-36.

B9. Whalen, D.H., and Liberman, A.M., (1987). Speech perception takes precedence over nonspeech perception, *Science*, Vol. 237, No. 4811, pp. 169-171.

- B10. Remez, R.E., Rubin, P.E., Pisoni, D.B., Carrell, T.D., (1981). Speech perception without traditional speech cues, *Science*, 212, 947-950.
- B11. McGurk, H. & McDonald (1976). Hearing lips and seeing voices. *Nature*, 264, 746-748.
- B12. Kohler, E., Keysers, C., Umiltà, M.A., Fogassi, L., Gallese, V., and Rizzolatti, G., (2002). Hearing sounds, understanding action: Action representation in mirror neurons, *Science*, 297, 846-848.
- B13. Kuhl, P. & Miller, J. (1978). Speech perception by the chinchilla: Identification functions for synthetic VOT stimuli. *J. Acoust.Soc.Am.* 63(3), 905-917.
- B14. Kluender, K.R., Diehl, R.L., & Killeen, P.R. (1987). Japanese quail can learn phonetic categories, *Science*, 237, 1195-1197.
- B15. Fowler, C (1986). An event approach to the study of speech perception from a direct-realist perspective. *J. of Phonetics*, 14,3-28.
- B16. Iverson, P. and Kuhl, P.K. (1995). Mapping the perceptual magnet effect for speech using signal detection theory and multidimensional scaling. *Journal of the Acoustical Society of America* 97: 553-562.
- B17. Lotto, A. J., Kluender, K. R., and Holt, L. L. (1998). Depolarizing the perceptual magnet effect. *Journal of the Acoustical Society of America* 103: 3648-3655.

C. Developmental (infant) speech perception

- C18. Kuhl, P.K. (2000). A new view of language acquisition. *Proceedings of the National Academy of Science*, 97(22), 11850-11857.
- C19. Eimas, P.D., Siqueland, E.R., Jusczyk, P., & Vigorito, J. (1971). Speech perception in infants, *Science*, 171, 303-306.
- C20. Houston, D. (2005) Speech perception in infants. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 417-448. London: Blackwell Publishing.

D. Cross-language speech perception

- D21. Werker, J. and Logan, J. (1985). "Cross-language evidence for three factors in speech perception". *Perception and Psychophysics*, 37 (1), 35-44.
- D22. Best, C.T. (1995). A direct realist view of cross-language speech perception. In W. Strange (Ed.) *Speech Perception and Linguistic Experience: Issues in Cross-language research* (York Press: Baltimore), pp.171-203.
- D23. Sebastián-Gallés N. (2005). Cross-language speech perception. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 546-566. London: Blackwell Publishing.

E. Relationship between speech production and speech perception

E24. Folwer, C. & Galantucci, B. (2005). The relation of speech perception and speech production. In *The Handbook of Speech Perception* (Pisoni, D. & Remez, R, editors), pp. 633-652. London: Blackwell Publishing.

Accommodations for students with disabilities Students requesting classroom accommodation must first register with the Dean of Students Office <http://www.dso.ufl.edu/drp/>. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

Academic honesty It is expected that all students will adhere to the University of Florida Honor Code and the academic honesty guidelines available at <http://www.dso.ufl.edu/judicial/procedures/honestybrochure.php>.