Spanish 597: Empirical methods in phonetics (Fall 2011)

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Books on library reserve:

Hardcastle, Handbook of Phonetic Sciences (HPS); available through the CAT in electronic format
Ladefoged, A course in phonetics (for reference only)
Ladefoged, Phonetic data analysis (for reference only)
Ladefoged, Elements of acoustic phonetics (for reference only)

Objectives:

This course will provide an intensive overview of articulatory and acoustic phonetics, with an emphasis on empirical data analysis. The physiology of speech production will provide the introduction, including readings on experimental techniques. This will be followed by acoustic modeling of the vocal tract, the study of critical bandwidths, and motor theories of speech perception. Attention will also be focused on acoustic phonetics, and the analysis of speech samples using PRAAT and other speech analysis software. This will include basic measurement techniques (formants and formant transitions, intensity and maximum rising velocity, spectral tilt, voice onset timing, pitch accent and intonational patterns), and the manipulation of speech samples to create experimental stimuli.

Assigned readings are either in the library reserve room or posted on ANGEL. You will notice that I have included articles on ANGEL that are not officially assigned, and I will continue to add articles throughout the semester. These readings are supplementary to the weekly lessons and may be helpful for thorough understanding, as well as for the preparation of the analytical comparison and the final project. Students are welcome to suggest additional articles to be posted on ANGEL.

Students will be making and analyzing audio recordings in .WAV format. Ideally each student should have a digital recorder capable of making .WAV (and not just .MP3) recordings. Devices such as iPods and iPhones do not provide high enough resolution for work in phonetics and most do not create .WAV files. Computers can also be used to record audio files, provided that an external microphone is used (not the internal microphones found on most portable computers). A program for creating digital audio files is needed. Several basic programs can be downloaded for free; a representative sample can be found at www.vstplanet.com/Other_audio_tools/Sound%20editors.htm

also: www.phoneticsciences.com/links.html
ASSIGNMENTS:

(1) One exercise on measuring and manipulating Voice Onset Timing (VOT).

(2) One exercise on the empirical measurement of vowel spaces and vowel normalization.

(3) One exercise on measuring vowel reduction (co-articulation/centralization and intensity).

(4) One exercise on manipulating intonational contours (by means of PRAAT).

(5) An outline of the final paper and a tentative minimal bibliography (at least ten entries),
turned in far enough in advance to receive comments and suggestions (see calendar of
assignments). This outline/bibliography will not carry a grade, but must be turned in by the
assigned date, in order for the final paper to be graded.

(6) During the last week of class, a brief (10-15 minute) oral presentation of the final project,
with accompanying audio-visual materials (electronic only; no paper!)

(7) A final research paper, involving an empirical analysis of a phonetic issue, and including
both measurement of phonetic data and at least one experimental procedure.

WEEKLY PARTICIPATION:

For each class, students will be asked to give a brief oral summary of selected readings. This
task will be assigned in a prior class, and will rotate among the students.

HomeController

THIS IS A PAPER-FREE COURSE. All assignments are to be turned in electronically in
documents prepared using Microsoft Word®. IPA phonetic symbols should be used
throughout; IPA symbols should be in the DoulosSIL font, available from www.sil.org
Make sure you activate the “save TrueType fonts” option in Word so that the IPA fonts will
be embedded in the text.

Send all written assignments in .doc format (choose the “Save as Word 1997” option), NOT
as .docx

All electronic communication should be through e-mail: jlipski@psu.edu. Do NOT send
messages via ANGEL; I will use ANGEL only for posting readings, assignments, and other
files.

GRADE BREAKDOWN:

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VOT exercise : 15%
Vowel space exercise: 15%
Vowel reduction exercise: 15%
Intonational phonology exercise: 15%
Oral presentation: 5%
Class participation: 10%
Final research paper: 25%

ACADEMIC INTEGRITY

The Pennsylvania State University defines academic integrity as the pursuit of scholarly activity in an open, honest and responsible manner. All students should act with personal integrity, respect other students’ dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts (Faculty Senate Policy 49-20). Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to: cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of their students. Students who are found to be dishonest will receive academic sanctions and will be reported to the University’s Judicial Affairs office for possible further disciplinary sanction. See http://www.psu.edu/dept/oue/aappm/G-9.html

DISABILITY ACCESS STATEMENT

The Pennsylvania State University encourages qualified people with disabilities to participate in its programs and activities and is committed to the policy that all people shall have equal access to programs, facilities and admissions without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell the instructor as soon as possible.

APPROXIMATE CALENDAR OF ASSIGNMENTS


Week #2 (Beginning August 29): THE PHYSIOLOGY OF SPEECH PRODUCTION AND ARTICULATORY PHONETICS. Readings: HPS, chap. 2; on ANGEL: Krakow, Physiological organization of syllables; Schroeder, Vocal tract geometry; Fuchs et al., Vocal tract geometry

Week #3 (September 7): Articulatory phonetics (cont.). Readings: HPS, chaps. 5, 8, 9; on ANGEL: Davidson and Stone, Epenthesis vs. gestural mistiming; Shamma, Physiological foundations of temporal integration

Week #4 (beginning September 12): INTRODUCTION TO ACOUSTIC PHONETICS. Readings: HPS, chap. 3; on ANGEL: Handbook of Speech Perception, chap. 1, chap. 8

Readings: HPS, chap. 4; on ANGEL: Allen & Miller, Listener sensitivity to VOT; Davidson-Nielsen, Syllabification of English words with –sp-, -st-, -sk

**Week #6** (beginning September 26): **SEARCHING FOR DISTINCTIVE FEATURES: NASALITY, CONTINUANCY, ETC.** Readings: HPS, chap. 15; on ANGEL: Handbook of Speech Perception, chap. 6; Coleman, Discovering the acoustic correlates of phonological contrasts; Boomershine et al., Allphony vs. contrast; Beddor, Nasals and nasalization; **VOT exercise due September 28.**

**Week #7** (beginning October 3): **THE ANALYSIS OF VOWELS: ACOUSTIC CORRELATES.** Readings: on ANGEL: Alfonso & Baer, dynamics of vowel articulation; Assmann et al., Vowel identification; Bennett, Spectral form and duration; Diehl, Auditory description of vowel categories; Disner, Vowel quality; Ladefoged and Broadbent, Information conveyed by vowels;

**Week #8** (beginning October 10): **VOWEL SPACES AND VOWEL NORMALIZATION.** Readings: on ANGEL: Adank et al., a comparison of vowel normalization procedures; Al Tamimi, vowel space size; Becker-Kristal, Acoustic typology of vowel inventories; Clopper and Pierrehumbert, Semantic predictability and vowel space reduction; Disner, Vowel normalization; Fant, Non-uniform vowel normalization; Hindle, Vowel normalization; Jacewicz et al., Vowel space areas; Petersen and Barney, Control methods for vowels; Schwartz et al., Dispersion-focalization theory of vowel systems; Schwartz et al., Vowel system inventories; Verbrugge et al., Vowel spaces; Weitzman, Critical bands; Zwicker, Critical bands (3 articles)

**Week #9** (beginning October 17): **COARTICULATION.** Readings: on ANGEL: Andruski et al., Effect of sub-phonemic differences; Beddor et al., vowel-to vowel coarticulation; Boyce et al., Underspecification and speech motor organization; Cho, Vowel-to-vowel coarticulation; Magen, Coarticulation; Manuel, Coarticulation and contrast; Ohman, Coarticulation. **Vowel space exercise due October 19**

**Week #10** (beginning October 24): **MANIPULATING VOWELS. USE OF THE AKUSTYK ADD-ON TO PRAAT.** Readings: on ANGEL: Assmann & Neary, perception of front vowels; Baker and Trofimovich, Interaction of native and second-language vowel systems;

Download AKUSTYK add-on and tutorials: [www.bartus.org/akustyk/synthesis.html](http://www.bartus.org/akustyk/synthesis.html)

**Week #11** (beginning October 31): **THE MEASUREMENT AND MANIPULATION OF INTENSITY.** Readings: on ANGEL: Cole and Hualde, /g/-lenition; Fougeron and Keating, Articulatory strengthening. **Proposed topic, basic bibliography and outline sketch of final paper due November 2;**

**Week #12** (beginning November 7): **INTRODUCTION TO THE ACOUSTIC STUDY OF INTONATION.** Readings: on ANGEL: Handbook of Phonetic Sciences, chap. 10. on ANGEL: Gussenhoven, Intonation; **Vowel reduction exercise due November 9.**

**Week #13** (beginning November 14): **STRESS AND EMPHASIS.** Readings: on ANGEL: Okobi, Acoustic correlates of word stress; Mo, Acoustic correlates of prosodic prominence; Bolinger, Theory of pitch accent; Campbell and Beckman, Stress, prominence and spectral tilt; Fry,
Duration and intensity; Fry, Experiments in the perception of stress; Heldner, Spectral emphasis; Hyman, pitch accent; Lieberman, Acoustic correlates; Sluijter and van Heuven, Spectral balance;

**Week #14** (beginning November 28): **REMAINING ISSUES.** Readings: on ANGEL: Pierrehumbert, The next toolkit. **Intonational manipulation exercise due November 30.**

**Week #15** (beginning December 5): **ORAL PRESENTATIONS OF FINAL PROJECTS.**

**FINAL PROJECT DUE MONDAY DECEMBER 12**