LIGN210 - Phonetics

Fall Quarter 2009

Class meetings: Tuesday-Thursday 11:00-12:50, AP&M 4218.

Instructor: Amalia Arvaniti; office: 4151 AP&M; tel. 53-48409, e-mail: amalia@ling.ucsd.edu

Office hours: Tuesday-Thursday 4:00-5:00, or by appointment

Course aims and organization: This course is a graduate-level hands-on introduction to phonetics. It covers the four main areas of phonetics, transcription, articulation, acoustics, and speech perception, and includes prosody and experimental design. The aims of the class are the following:

(a) to teach you the basics of phonetics
(b) to familiarize you with phonetic research and the current topics of interest/controversy
(c) to familiarize you and give you some experience with phonetic research protocols.

The final goals is for you to be able to (a) critically assess phonetic and phonetically-based work, and (b) have a basis for designing phonetic (or phonetically-based) research of your own. We will review the basics of each topic in lectures; in addition, many topics are accompanied by readings that present new or controversial perspectives; these will be used for student discussion in class. Emphasis in this course is placed on linguistic phonetics and the connection and relevance of phonetics and phonetic theory to the rest of linguistics, particularly phonology.

Required textbook and additional readings

- Reetz, Henning & Allard Jongman. 2009. Phonetics. Wiley-Blackwell.

Other basic reference books

- Johnson, Keith (2003) *Acoustic & Auditory Phonetics*. Oxford: Blackwell
- Ladefoged, Peter (2005) *A Course in Phonetics* (5th edition). Tompson, Wadsworth.
- Ashby, Michael and John Maidment (2005) *Introducing Phonetic Science*. Cambridge University Press.
- Ladefoged, Peter (1996) *Elements of Acoustic Phonetics*. Chicago: The University of Chicago Press
- Borden, Gloria, Katherine Harris and Lawrence Raphael (2003) *Speech Science Primer*. Lippincot, Williams & Wilkins.
- Ladefoged, Peter (2003) *Phonetic Data Analysis*. Blackwell.
- Ladefoged, Peter and Ian Maddieson (1996) *The Sounds of the World's Languages*. Blackwell.
- Hardcastle, William J. and John Laver (eds.) (1997) *The Handbook of Phonetics Science*. Oxford: Blackwell.
- Pisoni, David B. and Robert E. Remez (eds.) 2005 *The Handbook of Speech Perception*. Oxford: Blackwell.

Other reading class website: http://ling.ucsd.edu/~arvaniti/210readings.htm	**Where is it?**
Ladd, D. Robert. To appear. Phonetics in phonology. *Handbook of Phonological Theory* edited by John Goldsmith, Jason Riggle and Alan Yu. Blackwell.	class website
Port, R. F. & A. P. Leary. 2005. Against formal phonology. Language 81 (4): 927-964.	Web/library
Nolan, Francis. 1992. The descriptive role of segments: evidence from assimilation. In: G. Docherty and D.R. Ladd (eds.), *Laboratory Phonology 2,* 261-280. Cambridge: CUP.	class website
Goldstein, L. and C. Fowler. 2003. Articulatory Phonology: A phonology for public language use. In N. O. Schiller and A. S. Meyer (eds), *Phonetics and Phonology in Language Comprehension and Production: Differences and Similarities*. Mouton de Gruyter, pp. 159-207.	class website
Arvaniti, Amalia. 2009. Rhythm, timing and the timing of rhythm. *Phonetica* 66: 46-63.	AA's website
Arvaniti, A. & D. R. Ladd. 2009. Greek wh-questions and the phonology of intonation. *Phonology* 26	AA's website
Lotto, Andrew J., Gregory S. Hickok, Lori L. Holt. 2009. Reflections on mirror neurons and speech perception *Trends in Cognitive Sciences* DOI: 10.1016/j.tics.2008.11.008	Web/library
Johnson, Keith. 2006. Resonance in an exemplar-based lexicon: The emergence of social identity and phonology. *Journal of Phonetics* 34: 485–499. http://linguistics.berkeley.edu/~kjohnson/papers/YJPHO289.pdf	Cited URL
Xu, Yisheng, Jackson T. Gandour & Alexander L. Francis. 2006. Effects of language experience and stimulus complexity on the categorical perception of pitch direction. *Journal of the Acoustical Society of America* 120(2): 1063-1074.	JASA website

Hawkins, Sarah. 2003. Roles and representations of systematic fine phonetic detail in speech understanding. *Journal of Phone*tics 31 (3-4): 373-405.	JPhon website
Himmelman, N. & D. R. Ladd. 2008. Prosodic Fieldwork. *Language Documentation and Conservation* 2: 244-274.	Journal site

Requirements and grading

- This course involves a great deal of new terms that you need to memorize and plenty of reading. You are advised to study and review regularly, as each class builds on terms and notions covered in previous classes.
- Assigned readings are meant to be (at least) skimmed *before* class.
- Late assignments will incur a grade penalty (unless there is a *very good* reason for being late).

Assessment will be based on four things:

(1) Short essay
(2) Your participation in class discussions
(3) Your literature review and project proposal
(4) Your class paper: topics for these mini research projects are provided. Each is a joint project involving two or three students. You are encouraged to start reading relevant literature as soon as possible, consulting (but not being limited to) the following journals: *Journal of Phonetics, Phonetica, The Journal of the Acoustical Society of America (JASA* - Speech Communication section)*, Speech Communication, Language and Speech, Phonology,* (*Papers in*) *Laboratory Phonology* series, volumes 1-9, *Cognition*.

Grades: the grades will be based on the following

Essay	20%
Discussion participation	20%
Literature review & proposal	20%
Class paper	40%
TOTAL	100%

Collaboration, acknowledgements and plagiarism: you are strongly encouraged to work with others for all assignments, and to discuss your class project not only with your partner(s) but with other students as well. However, all assignments should be your own work. Any help or contribution from others should be acknowledged in a special acknowledgments section of your work (such contribution could be an idea that changed the course of your research paper, help with data collection or analysis, etc.). Please also note that any time you use the ideas or words of someone else you should explicitly acknowledge the source in a citation and in the references. This includes material you found on the web (in which case, you can provide the website in the references).

Lab meetings: We will be holding weekly meetings, to discuss relevant literature and class projects (e.g. how to collect data, how to analyze data statistically, how to write up the project etc). The aim of these meetings is to provide an open forum to exchange views on research and to familiarize you with a collaborative research environment.

Additional resources

- If you are interested in transcription, you can find many websites, including that of the late Peter Ladefoged that offer examples and practice. Anyone of them will do. Spectrogram-reading sites are also available.

LIGN210 Phonetics

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Week	Tuesday	Thursday	Reading	Assignments
Wk 0		**9/24:** Aims and structure of the course. What is phonetics and why it is worth studying it? Relationship with phonology	R&J, chapter 1	
Wk 1	**9/29**: Basic articulatory phonetics and transcription of GAE	**10/1:** More on the articulation of consonants and vowels	R&J chapters 2 &3 ---------- R&J chapter 4	
Wk 2	**10/6**: Double articulation, vowels, airstream mechanisms	**10/8**: Physiology	R&J, chapters 4 & 6 ---------- R&J, chapter 5	
Wk 3	**10/13**: Coarticulation and theories of articulation	**10/15**: Discussion of Ladd (in press) and of Port & Leary (2005)	Goldstein & Fowler 2003 Nolan 1992 ---------- Ladd (in press) Port & Leary (2005)	
Wk 4	**10/20**: Introduction to acoustics	**10/22**: Principles of digital signal processing	R&J, chapter 7 ---------- R&J, chapter 8	**10/22: Short essay/commentary (2-3 pages) on Port & Leary, Ladd and coarticulation**
Wk 5	**10/27: Amalia at UIUC** **NO CLASS**	**10/29: Amalia at UC** **NO CLASS**		

Wk 6	**11/3**: The source-filter theory of speech production	**11/5**: Acoustic characteristics of speech sounds	R&J, chapter 9 ---------- R&J, chapter 10	**11/3: Literature review and project proposal due** **11/5: Record one short audio file for spectrogram reading in class (we should not know the content)**
Wk 7	**11/10**: Prosody I: introduction	**11/12:** Prosody II: intonation	R&J, Chapter 11 (11.1-11.3) Himmelman & Ladd (2008) ---------- R&J, Chaper 11 (11.4) Arvaniti & Ladd 2009	
Wk 8	**11/17**: Prosody II: rhythm	**11/19**: Hearing	Arvaniti 2009 ---------- R&J, Chapter 12	
Wk 9	**11/24:** Speech perception I	**11/26: THANKSGIVING NO CLASS**	R&J, Chapter 13 Lotto, Hickok, Holt 2009	
Wk 10	**12/1**: Speech perception II	**12/3**: Project presentations	Hawkins, 2003 Johnson 2006 Xu et al. 2006	**12/3: Class presentation of projects**
Exam week				**12/11, 4 pm: class papers due**

Reading sign up sheet

Reader	Paper
	Ladd, D. Robert. To appear. Phonetics in phonology*. Handbook of Phonological Theory* edited by John Goldsmith, Jason Riggle and Alan Yu. Blackwell.
	Port, R. F. & A. P. Leary. 2005. Against formal phonology. Language 81 (4): 927-964.
	Nolan, Francis. 1992. The descriptive role of segments: evidence from assimilation. In: G. Docherty and D.R. Ladd (eds.), *Laboratory Phonology 2,* 261-280. Cambridge: CUP.
	Goldstein, L. and C. Fowler. 2003. Articulatory Phonology: A phonology for public language use. In N. O. Schiller and A. S. Meyer (eds), *Phonetics and Phonology in Language Comprehension and Production: Differences and Similarities*. Mouton de Gruyter, pp. 159-207.
	Himmelman, N. & D. R. Ladd. 2008. Prosodic Fieldwork. *Language Documentation and Conservation* 2: 244-274.
	Arvaniti, Amalia. 2009. Rhythm, timing and the timing of rhythm. *Phonetica* 66.
	Arvaniti, A. & D. R. Ladd. 2009. Greek wh-questions and the phonology of intonation. *Phonology* 26: 43-74
	Lotto, Andrew J., Gregory S. Hickok, Lori L. Holt. 2009. Reflections on mirror neurons and speech perception *Trends in Cognitive Sciences* DOI: 10.1016/j.tics.2008.11.008
	Johnson, Keith. 2006. Resonance in an exemplar-based lexicon: The emergence of social identity and phonology. *Journal of Phonetics* 34: 485–499. http://linguistics.berkeley.edu/~kjohnson/papers/YJPHO289.pdf
	Xu, Yisheng, Jackson T. Gandour & Alexander L. Francis. 2006. Effects of language experience and stimulus complexity on the categorical perception of pitch direction. *Journal of the Acoustical Society of America* 120(2): 1063-1074.
	Hawkins, Sarah. 2003. Roles and representations of systematic fine phonetic detail in speech understanding. *Journal of Phone*tics 31 (3-4): 373-405.

PROJECTS: the project descriptions are indicative only; you can change the languages used or the focus of the project to better suit your interests (subject to instructor approval)

1. A classic view of linguistic rhythm is that languages fall into two main categories, syllable-timed languages (like French) and stress-timed languages (like English), with many languages being somewhere in between. Empirical evidence for these categories has been elusive, but recently groups of researchers have argued that they have found measures allowing for the successful classification of languages along the stress- vs. syllable-timing continuum. However, most researchers look at well-known languages that are relatively easy to classify, such as Spanish, Dutch, Catalan etc. In this project you will record at least two of the following languages, English, German, Spanish, Italian, Greek, Korean, and examine the effect of speaking rate on metric scores.

Or have two groups work on that?

2. One of the paradigms used for the examination of speech rhythm is that of entrainment, where speakers are asked to adapt the rhythm of their utterances to the beats of a metronome (beating at different rhythms). Work by Fred Cummins has shown that entrainment is easier for English speakers than Spanish and Italian speakers, which he interprets as evidence for different rhythmic categories. However, the phrases he used are not comparable across languages: cf. *big for a duck* vs. *busca la moto*. Thus, the difference between these languages may be found in the materials used, some of which allow for easier "pedification" (foot-formation). In this experiment, we will test this hypothesis with materials from Spanish and Korean (in which the foot is not so important).

A cycling experiment as well.

3. Record data from two languages (it does not matter how related they are); the data should be recorded at fast and normal speaking rate; compare the rates of reduction for vowels and consonants in these languages. What does that tell us about speaking rate and its linguistic effects? Are they the same for both languages, or are there any differences. If so, what do they tell us about timing and the organization of speech production?

4. how about an experiment of how others perceive the tonal contrasts of a language or assign stress and accent and so on – like Ken's work

something about tone perception???? And/or production for Jing and Bethany

5. One of the standing problems of English intonation has been the role of the "phrase accent," a tonal category that is said to fill the gap between the last stress-related pitch movement of an utterance (nucleus) and the end of the overall melody. It is possible that this "phrase accent" is attracted to stress, so, for example, when pitch falls it is timed so as to be flat on the first stressed syllable after the nucleus; this hypothesis can be tested by using utterances with falling intonation that end in single words with stress is various syllables (tried and tested: Ma, Mama, Mamalie), compounds and words with secondary stress (e.g. boysenberry, Abernathy) and utterances with early focus.

6. Phrase accents attracted to stressed syllables are also said to be part of calling contours in English. On the other hand, it is not clear how such contours operate in other languages, particularly languages like Spanish which do not have multiple stresses in the same word. In this study, you would do a comparative analysis between English and Spanish calling contours, to see what differences there exist between the two languages (since they have different metrical systems), and the extent to which the existing analyses of English are correct.

7. Clopper, Pisoni and de Jong (2005) provide new data that show different vowel systems for different regions in the US; this classification has one large region, "the West" which includes everything west of the Rockies; record native Californian speakers from different areas of California and compare their data to the Clopper et al. data from "the West." Are the data you collect the same as those of Clopper et al., and if not, what are the differences and what do you think they can be attributed to?