

Linguistics 600.01. Phonetic Theory — Autumn, 2009

Synopsis: This course is a graduate-level introduction to phonetics. It is an overview of phonetic representations and theories, starting from the basics of the acoustic theory of speech production and extending through recent accounts of prosodic structure and its relationship to the realization of vowels and consonants. A major component of the coursework is a set of exercises, with data gathering and/or analysis outside of the classroom and an associated in-class lab assignment. This component is intended to fulfill the main function of the course, which is to provide the background for further work in phonetics and laboratory phonology. A second component is a small field project, with incremental field project reports geared to the topics covered in the class. Most of the field project reports also have one or two associated in-class lab assignments using data recorded in collaboration with the field project language consultant, so that this component of the coursework relates the phonetic theories and representations reviewed in class to the classical phonological model of distinctive features and allophonic variation embodied in the International Phonetic Alphabet. Thus, this component covers some of the background for courses in field methods and phonological theory by providing the opportunity to exercise transcription skills in conjunction with other methods of observation in working with a language consultant. However, this coverage assumes a basic familiarity with the IPA model and its relationship to subsequent phonological theory. A student who wants a more thorough, basic introduction to classical phonemics and the IPA should enroll instead in Speech & Hearing 320 or Linguistics 500.

Instructor: Mary Beckman, office 21 Oxley Hall, tel. 292-9752, e-mail mbeckman@ling.ohio-state.edu

Office hours: Wednesdays at 11:00 and by appointment.

Class meetings: Tuesdays & Thursdays 9:30-11:18 in Derby, room 0029.

Course web page: <http://ling.osu.edu/~mbeckman/ling600.01> Course number: 14522 Credits: 5

Course materials and coursework

Online materials and textbook: There are three sets of materials associated with this course.

1. *A Laboratory Course in Phonology*. By Mary E. Beckman & J. B. Pierrehumbert.

This set consists of extracts from a textbook that is in preparation, including recordings and other copyrighted material, which will be made available incrementally on a hidden web site, which I can reveal to you when you have agreed to certain conditions on use which are designed to protect the privacy of the talkers who contributed the materials.

2. *Phonetic Theory — Course Project and Lab Assignments*. 2006 edition, online course materials that are available at the course web page at: <http://ling.osu.edu/~mbeckman/ling600.01>

This set is all of the other documents that are linked into the course web page which describe the reports that are due at various stages of the field project and the lab assignments. One of these includes the IPA chart and useful hints for working with a language consultant, as well as suggestions about **how to find a language consultant**. You should consult this section immediately.

3. *Acoustic and Auditory Phonetics*. 2nd edition. By K. Johnson. Blackwell (2003).

This is a textbook on sale at the main campus bookstore and other similar outlets. The background reading that is assigned for each topic is from this book, and it must be done before the beginning of the class in which we begin a topic so that you can **ask questions about any passage you do not understand** as we talk about the concepts and apply them. If you do not ask questions, I will assume that you understand the concepts in the book well enough to apply them in doing the labs, take-home exercises, and field project report without any extra explication from me.

Final grade: The final grade in the course will be based on 5 take-home exercises (50%), 5 field project reports (50%), and 10 associated in-class labs (each of which will contribute to 10% of the grade for the associated exercise or field project report). These components are described in more detail below.

Exercises: The 5 take-home exercises use pre-recorded data from *A Laboratory Course in Phonology* or new data that we will gather as part of the exercise. Try to begin work on each of these assignments when we begin coverage of the associated topic, in order to be able to ask questions if you have any difficulty figuring out how to do something. (The in-class lab sessions are a good time to raise technical questions, such as “How can I get an LPC-smoothed spectrum in Praat?”) The instructions for each exercise will tell you what to

include in the final written report. If you want feedback, put a copy of this final written report in my mailbox in Oxley Hall by 1:00 p.m. on the last weekday before the exercise is listed in the schedule on p. 4 (which is the day that we will discuss the exercise in class). If you do that, I will write comments and a grade on it and return it to you in class the next day. Alternatively, if you are willing to get only a grade on the exercise and no other feedback from me, bring your report to class on the day that we discuss it and turn it in at the beginning of that class period. Each written report provides 10% of the final grade.

Course project: This is a small field project, a from-scratch phonemic description of a language, done in collaboration with a native-speaker consultant. It is intended as a practicum for using the observational methods and continuous representations associated with the phonetic models covered in the class in working with a language consultant, and for appreciating the role of the symbolic representations and observational methods of classical “articulatory phonetics” (i.e., phonemics) within the larger framework of phonetic theory. There are 5 project reports, each contributing 10% of your final grade. Each field project report is due at 1:00 p.m. on the last weekday before the class meeting where it is listed on the schedule on p. 4 if you want feedback on it, and otherwise at the beginning of the listed class meeting.

☞ See the description of the project and the instructions for the first project report in the sections of *Course Project and Lab Assignments* which are linked into the schedule of assignments for Week 2. Look especially at the section on “Finding a language consultant.” This describes a decision that you must make within the next week — namely, what language to use for your field project. Those of you who have a target language that you want to use for the project and know a native speaker who is willing to act as your language are encouraged to set this up on your own. I will identify at least two native speakers of languages I’m interested in who are willing to act as consultants for everyone else.

In class lab assignments: Starting in week 2, part of one or both of the class meeting times will be an in-class lab session on the topic being covered in the reading for the week and in the next upcoming exercise or field project report. Almost every assignment has 2 parts.

(1) The first part is designing and collecting the materials to be analyzed and then writing a brief synopsis (a half page or less) of this preparation for the lab session, including a concise description of the materials (such as a table) and predictions about what the results of the analysis will be, depending on the answer to the more general question being addressed. **Bring the materials to class** on some portable medium such as a CD or thumb drive, or put them someplace (e.g., in a subdirectory of your home page directory on the web) where they can be downloaded over the internet. Also **bring 2 paper copies of your description of the materials**, one to give to the instructor at the beginning of the lab session, and the other on which to keep notes of pertinent observations. (If you write the description in your personal research notebook, you can simply make a Xerographic copy of the relevant page to turn in.)

(2) The second part is a brief report (again, a half page or less, exclusive of figures), explaining how the analyses done in the lab session answered the question to be addressed. This report should be included as an appendix to the write-up of the associated take-home exercise or as an appendix to the associated field project report. See the schedule of assignments below for the day on which we will do each lab in class (i.e., the day on which your report of the preparatory part is due) and the due dates for the associated exercise write-up or field project report. **10% of the grade for a take-home exercise or field project report is based on your preparation and writeup of any associated in-class lab.**

☞ Download Praat onto your home computer or make other arrangements to have regular access to Praat. Make sure that you can make a recording to your computer hard drive or that you can get a computer audio file from a recording made in some other way. You will need to do this to be able to prepare for the first in-class lab assignment. Try to do this by the end of Week 1.

Some comments on collaboration and related matters

A note on collaboration: Some of the in-class and take-home lab exercises require fairly extensive data collection and/or measurement sets. You will find it easier to do these if you team up with classmates to form a lab group, to distribute the drudge-work. Also, if you choose to work with one of the language consultants that I find for your field project, you will be collaborating with others working on the same language in a group elicitation session. Even if you choose to find your own language consultant, you will find it helpful to team up with someone else who is also working on the same language, to do your fieldwork together in collaboration with the same language consultant. You also may find it helpful to form study groups with

several classmates, to discuss the readings and/or the labs. I welcome and encourage such cooperative research and study habits. However, each of you must work independently in writing up all take-home exercise assignments, lab assignments, and field project reports, and if you share ideas, please say this explicitly in a footnote or in an *Acknowledgements* section of your report (see the next two sets of comments).

Academic misconduct. Please note that I am required by my contract with the university to report suspected cases of academic misconduct to the Committee on Academic Misconduct. One very common form of misconduct is plagiarism. Remember that any time you use the ideas or the statements of someone else, you must explicitly acknowledge the source in a citation (if there is a publication) or in an acknowledgments section. This includes material that you found on the Web. The university provides thoughtful guidelines for how to responsibly conduct research use the Web as a source at <http://liblearn.osu.edu/tutor/les7/>.

Acknowledging all of the contributions of others. In addition to being scrupulous about citing the published sources of ideas and statements, a good scientist also is generous in acknowledging all of the contributions of research associates and other colleagues. Especially when you are making a sole-authored report of collaborative research, you should be careful to give credit to those who worked with you in an *Acknowledgements* section. If you keep a personal research notebook in which you record decisions about methods and so on, you can use the notebook also to take notes of discussion sessions, as a way to keep track of who did what and who came up with which ideas. A personal research notebook is also a good place to keep a record of information elicited in your sessions with the language consultant who is collaborating with you on the field project. (See point 3 in Section 3 of the document on the course web page that describes the *Course Project and Lab Assignments*.)

Students with disabilities: If you need some accommodation to the impact of a disability, please make an appointment to meet with me as soon as possible to discuss the course format in terms of anticipated needs and to explore potential adaptations of the format to those needs. I rely on the Office of Disability Services to verify the need for accommodation and to help develop accommodation strategies. Students with disabilities who have not previously contacted the Office of Disability Services are encouraged to do so, by looking at their web site (<http://www.ods.ohio-state.edu>) and calling them for an appointment (tel. 614 292-3307).

Sequence of topics

Topic 1 (Weeks 1 & 2) — Introduction to sound and “sounds” (issues of discretization and segmentation).
Types of acoustic signals, and the alternation of major class features.

Topic 2 (Week 3) — Some basics of signal analysis. The voice source (periodicity and pitch).

Topic 3 (Weeks 4 & 5) — The vowel space. Acoustic theory of speech production. Calculating resonance frequencies of a simple tube. LPC analysis. Psychoacoustics of timbre.

Topic 4 (Week 6) — Acoustics of fricatives. Quantal theory and fricative inventories.

Topic 5 (Weeks 7 & 8) — Assessing perceptual categories and measuring perceptual distance.

Topic 6 (Week 9) — Acoustics of plosive consonants.

Topic 7 (Week 10) — Phonation type contrasts on obstruents. Positional effects.

Topic 8 (Week 11) — Constrictions coupled in parallel and in series. The acoustics of nasals and laterals and of various types of “secondary” articulation.

Weekly schedule of readings and assignments

Top Wk	Class meets	Read in Johnson	Take-home exercise	Field project report	In class lab	Where final writeup goes	Other misc. preparation
(1) 1	Sep 24						Download Praat by Fri
2	Sep 29	Ch. 1			1 Basic acoustics	Include in exercise 1	
	Oct 1	Ch. 2 (skip 2.3.5)	1 Major classes				Specify FPL by class Thu
(2) 3	Oct 6	Sections 5.1-5.2		1 Language consultant	2 Calculating F0	Include in exercise 2	
	Oct 8						
(3) 4	Oct 13	Sections 5.3-5.5	2 Rugaohua tones	2 Typical words			
	Oct 15	Sections 2.3.5 & 6.1-6.5			3 Estimating vocal track lengths	Include in field project report no. 3	Download R by Fri if using it in reports
5	Oct 20	Ch. 3			4 Measuring formants in English Vs	Include in exercise 3	Install tcl/tk & ChVow.tcl if using for FPL.
	Oct 22				5 FPL vowels	Include in FPR no. 3	
(4) 6	Oct 27	Sections 7.1-7.4			6 Judging perceptual distances	Include in your writeup of exercise 4	
	Oct 29			3 The vowel space	7 Fricatives of the FPL	Include in FPR no. 4	ChVow.tcl results due in class or before
(5) 7	Nov 3		3 Method of adjustment				
	Nov 5	Ch. 4 & Secs 6.6 & 7.2					
8	Nov 10						
	Nov 12	Ch. 8	4 MDS with fricatives				
(6) 9	Nov 17				8 Plosives of the FPL	Include in FPR no. 4	
	Nov 19			4 Obstruents (prelim list)			
(7) 10	Nov 24				9 Phonation types, in FPL and Korean	Include in your writeup of exercise 5	
(8) 11	Dec 1	Ch. 9	5 Korean stops				
	Dec 3				10 Nasals & laterals, FPL	Include in FPR no. 5	
12	*due Dec 8			5 Complete consonant chart			

*I will be available for consultation on Tuesday of finals week, but we will not have a class meeting.