

Laboratory Phonology 350: Fall 2009

Fundamentals of Laboratory Phonology

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Class time: TTh 11am-12:20pm
Class location: Annenberg 101

What's this course all about?

To process speech, humans relate the continuous physical dimensions of acoustics and articulation to the mental dimensions of phonological structure. Laboratory phonology explores the physical and mental aspects of speech and their interrelationships.

Goal 1: Recognize the structure of theories of our phonological knowledge. What types of mental structure have phonologists posited to help understand our ability to process speech?

Goal 2: Learn how to connect such theories to empirical data. How can we use empirical data (corpus analysis, acoustic phonetic analysis) to constrain and inform phonological theory? How can we use phonological theory to inform the collection of empirical data?

What am I going to do in this class?

We'll work towards these goals by:

1. Reading and lectures providing overviews of phonological theory. We will look at theories of phonological representations (roughly, sound *structure*) as well as theories of phonological grammars (roughly, sound *patterns*)
2. Readings and lectures providing overviews of acoustics and articulation. How is speech physically realized? We'll focus primarily on acoustics as well as its relation to production.
3. Collecting quantitative data. The first step to actually doing research is learning the method of collecting data. In laboratory exercises you will quantitatively analyze linguistic databases and acoustic recordings of speech.
4. Analyzing quantitative data. Data from experiments are just collections of numbers; they only take on meaning when placed in the context of a theory. In laboratory reports, you will relate the data collected in your labs back to phonological theories (demonstrating the bidirectional relationship of phonological theory and quantitative data).
5. Formulating your own research questions. Working in a project group, you will design a pilot experiment to address questions in phonological theory.

Prerequisites: Linguistics 250 or the equivalent, or permission from me.

Webpage: Blackboard. You should be able to access it by going to courses.northwestern.edu. Let me know if you have trouble.

Textbooks: Gussenhoven + Jacobs: Understanding phonology (GJ)
Ladefoged A course in phonetics (L)
Note: CD for Ladefoged can be downloaded at:
<http://www.ladefogeds.com/course/contents.html>

Lecture slides will be posted on Blackboard.

Overview of the class

The class will begin with a brief introduction to laboratory phonology, followed by a review of the basics of speech production and perception and orthographic transcription of speech (the most basic method for the observation of speech behavior).

We'll then turn to the basic building blocks of phonological theories—grammars (formal specifications of the mechanisms by which perceive and produce linguistic structure). We'll use linguistics databases to examine the basic predictions of these theories.

Next we turn to the acoustics of speech, discussing its relation to production in more detail and how to analyze acoustic data (acoustic phonetics).

In the final part of the class we'll examine phonological representations in more detail. We'll examine the abstract mental representations of sounds below as well as above the segment, both in phonological theory and in acoustic phonetics.

Assessments: What You Need to Do

<u>Assessment Type</u>	<u>% of Final Grade</u>
Participation in class meetings	15%
Laboratory assignments (7)	70%
Final project	
Initial proposals	1%
Project outline	1%
Presentation	4%
Paper	9%

1. Participation in class meetings. Discussion of the ideas in lectures and readings is a critical component of advancing our understanding of sound structure. We all need to be part of the conversation to make this happen. This will be assessed in two ways:
 - a. Attendance.
 - b. Ability to meaningfully participate in discussion. This doesn't mean you have to know everything before you come to class. Come prepared with clarification questions.
2. Laboratory assignments. To learn how to conduct research in phonology, these lab assignments will give you practice in research methods as well as relating speech data to phonological theory. They will be handed roughly every week; you will have one week to do them. They will involve both data collection (gathering acoustic measures; searching databases) and written data analysis. We will discuss the implications of each assignment after I've had a chance to grade them.

Note: you may turn in hard copies or email your assignments—either is acceptable.

3. Final project. Research is not just working through assigned problems; it's about coming up with problems to solve on your own. To get you started on this process, you will work on pilot research projects in groups. These are not intended to be complete experiments, but rather the initial phase of planning an experiment (with the possibility of collecting preliminary data). There will be four parts to this project.
 - a. During the 6th week of classes we'll brainstorm ideas for projects. I'll give you some suggested topics. You will need to turn in a 1-1.5 page (single spaced) project proposal outlining what you are interested in working on. Details of this will be discussed in class.
 - b. You'll draw up a project plan with your group (and turn this in to me). Over the following two weeks, you and your project group will conduct background research and design the research study. Pilot data may be collected.
 - c. During the 9th week of classes you will present an overview of your project and along with any pilot data.
 - d. Leading up to finals week, you will incorporate the feedback from the presentation. Additional pilot data may be collected. You will then review the work in a final paper (approx. 8-10 pages single spaced), describing the questions and logic behind your research design.

We'll discuss each phase in more detail later in the course.

Course Policies

1. Keep up with the class. The syllabus—topics, assignments, readings, etc.—may change. These changes will be announced in class and posted on the website. It is your responsibility to keep up with these changes.
2. You have to do your work on time. Due dates are firm; attendance in class is not optional. If this is a problem, see #3. The highest possible letter grade for work handed in during the first 24 hours after class will be a C. I will give comments and suggestions on work turned in later than this, but you will receive no credit for the assignment.
3. If you have a problem, give me sufficient time to help you! If you've tried to do an assignment, but can't seem to complete it, come to me well before it's due. If you are unable to come to a class, try to let me know beforehand, or as soon as possible after class. Your reasons for class absences need to be verifiable.
4. You should work together on laboratory assignments, but the finished product must be your own. Working together is a big part of our in-class work; I hope this will extend outside of the classroom. However, for most assignments, your written work must be your own. There should not be any substantial amount of overlap between your prose and that of another student's. If an assignment asks for examples, you must draw on distinct sets of examples from other students.

Violations of academic integrity will be referred to the Dean's office, per WCAS policies. See <http://www.wcas.northwestern.edu/advising/integrity/index.html> for more details.

Course Plan (Tentative!)

Date	Topic Area	Readings	Topics	Assignments
9/22	Introduction	L: Chap 1,2 GJ: 1	Introduction. Speech production basics; transcription	HW1 Assigned: Transcription
9/24				
9/29	Systematic structure of phonological knowledge	GJ: 2	Structured sound systems	HW1 Due
10/1			Phonotactics. Linguistics databases in R	HW2 Assigned: English Phonotactics I
10/6		GJ: 3, 4 Supplemental: L: 3,4	Phonemes + allophony. Phonological processes	
10/8				HW2 Due HW 3 Assigned: Phonological analysis
10/13		Supplemental: Pierrehumbert (2006)	Formal models of sound systems; Exemplar theory	
10/15				HW3 Due HW 4 Assigned: Word frequency, familiarity and length
10/20		Acoustic Phonetics	Guest lecture	Waveforms
10/22	L: 8		Spectrograms	MEET IN TECH COMPUTER LAB HW 4 Due Final project sketches assigned
10/27			Measuring in Praat; text grids	MEET IN TECH COMPUTER LAB HW5 Assigned: Word durations
10/29	Final project planning			

Date	Topic Area	Readings	Topics	Assignments
11/3	Phonological representations beyond the segment	GJ: 5	Distinctive feature theory	HW5 Due HW6 assigned: Natural classes
11/5		GJ: 9	Autosegmental theory	Final project plan due 11/6 5pm
11/10		GJ: 10		HW6 Due HW7 assigned: English phonotactics II
11/12			Pitch analysis	MEET IN TECH COMPUTER LAB
11/17			Prosody	MEET IN TECH COMPUTER LAB HW7 Due
11/19	Final project			
11/24	presentations			

12/7 5pm Final Papers due