# Linguistics 151
Fall 2011

Class MWF 9:30-10:40

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Sections We 11:00AM - 12:10AM, SS1 135
We 5:00AM – 6:10PM, SS1 135
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Prerequisite: Ling 101 (Phonology 1)

Required Texts: *Elements of Acoustic Phonetics*, Peter Ladefoged; *Acoustic and Auditory Phonetics*, Keith Johnson (3rd edition!).

Requirements:

- ☛ Homework problems, most classes (50%)
- ☛ Midterm (15%)
- ☛ A final project of about 5-8 pages (20%)
- ☛ Readings (15%)

*Goals of the course:*

This course provides an introduction to instrumental phonetic analysis – analysis using experimental methods. The emphasis is on the acoustics and perception of speech. Topics covered include sound waves; sources and acoustic properties of speech sounds; analysis of waveforms, pitch tracks, and spectrograms; perception of speech sounds. Course work will emphasize hands-on experience with speech analysis software, and students will be learn about experimental design. A major theme throughout the quarter will be the role phonetic principles might have in explaining phonological patterns.

*Homeworks*:

Homework assignments will be given out after most classes and due the following class. As usual in our department, you are encouraged to discuss homework problems with others, in great length and detail. *But you must write up your homework alone*. Late homeworks will be marked down unless there is a legitimate reason. Two homeworks will be dropped from the overall grade at the end of the quarter, so if you bomb or miss a couple, it won't hurt you.

*Sections*:

Sections are not required, but they are strongly recommended, and if you are struggling with the material then we will absolutely expect you to go to section.

Sections this year are in SS1 135, a computer lab, so that they will emphasize hands-on practice with the speech analysis software we use (Praat). Here is word from the lab people about how to open Praat in the lab:

"Since Pratt is specific to a course, shortcuts to launch it are in a class folder; to run the program do the following after logging in:

1) Open the "Applications" folder on the desktop
2) Open the "Class Folders" folder
3) Open "Linguistics" folder
4) Open "LING 151" folder"

*Midterm*:

This will be take-home, worth 15% of the overall grade.

*Final project:*

The final project will involve designing and running a small-scale acoustic or perceptual experiment. You will work in teams of 2-3 on this project.

*Readings:*

There will usually be a reading due before each class. 15% of the course grade will depend on short responses to the assigned readings. The object of the reading responses is to ensure that students do the readings and give some thought to them.

*Attendance:*

If you miss a class, it is up to you to borrow notes from someone, get homeworks, and so on. Please don't ask the TA (or me) to go over what we did in a class.

*Academic honesty:*

UCSC does not tolerate plagiarism. People found to have plagiarized will be reported to their college, with dismissal from the university a possible consequence. It can lead to failure of the class. If you're unclear about what constitutes plagiarism, or what the consequences are, check out http://www.ucsc.edu/academics/academic_integrity/.

*Grades:*

Grades on course work will be notated as "excellent", "good", and so on. These grades will be numerically coded in eCommons on the usual 100-point scale. Below you can see what each adjective means.

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|---|---|---|---|---|---|---|---|---|---|
| 98 | = | Outstanding | = | A+ | 78 | = | Fairly good | = | B-/C+ |
| 93 | = | Excellent | = | A | 73 | = | Fair | = | C |
| 88 | = | Very good | = | A-/B+ | 63 | = | Passing | = | D |
| 83 | = | Good | = | B | | | | | |

*Schedule of Topics (still under construction!)*

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| 9/23 | Introduction; how are phonetics and phonology different? |
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| 9/26 | Simple harmonic motion; sinusoidal waves; pitch and loudness. |
| | *Reading*: Ladefoged chaps 1-2. |
| 9/28 | **No lecture. Sections required this week only.** |
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| 9/30 | Sound waves; complex waves and quality. |
| | *Reading*: Ladefoged chap 3. |
| 10/3 | Fourier's theorem; spectra. |
| | *Reading*: Ladefoged chap 4. |
| 10/5 | Complex waves and the GCD; resonance and filters. |
| | *Reading*: Ladefoged chap 5. |
| 10/7 | Consolidation |
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| 10/10 | Source-filter theory: (a)periodic sources and formants. |
| | *Reading*: Ladefoged chap 7. |
| 10/12 | Deriving formants for [ə,i,a,u]. |
| | *Reading*: Ladefoged chap 8. |
| 10/14 | Consolidation |
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| 10/17 | Computers and phonetics: sampling, quantization. |
| | *Reading*: Ladefoged chap 9 through p. 145. |
| 10/19 | Computers and phonetics: autocorrelation, rms intensity. |
| | *Reading*: Ladefoged chap 9 (cont). |
| 10/21 | Computers and phonetics: spectra and spectrograms. |
| | *Reading*: Ladefoged chap 10. |
| 10/24 | Spectra and spectrograms (cont). |
| | **Midterm given** |
| 10/26 | Spectra and spectrograms (cont). |
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| 10/28 | Cues to speech sounds: vowels. Ultrasound too! |
| | *Reading*: Johnson 6.3-4. **Midterm due.** |
| 10/31 | Cues to speech sounds: fricatives. |
| | *Reading*: Johnson 7.1-3. |
| 11/2 | Cues (cont): stops. |
| | *Reading*: Johnson 8.1-3. |
| 11/4 | Cues (cont): stops (cont). |
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| 11/7 | Cues (cont): nasals, laterals. |
| | *Reading*: Johnson 9.1-4. |
| 11/9 | Hearing. |
| | *Reading:* Johnson chap 4; 6.5; 7.4; 8.4. |
| 11/11 | **Holiday** |
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| 11/14 | Speech perception: categorical perception, top-down effects. |
| | *Reading:* Johnson 5.1-3. |

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| 11/16 | Identification and discrimination tasks. |
| | *Reading:* Johnson chap 5 (cont). |
| 11/18 | Perception and phonology. |
| | *Reading*: Johnson 6.6, 7.5, 8.5, 9.5 |
| 11/21 | Laboratory phonology |
| | *Reading:* Myers, Scott (1998), "Surface underspecification of tone in Chichewa", *Phonology* 15. Read pp. 367-383 only. |
| 11/23 | Sociophonetics: phonetics and gender, class, ethnicity… |
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| 11/25 | **Holiday** |
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| 11/28 | Labphon (cont) |
| | *Reading:* Zygis and Padgett (2010), "A perceptual study of Polish fricatives, and its implications for historical sound change", *Journal of Phonetics* 38, pp. 207-226. |
| 11/30 | Labphon (cont) |
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| 12/2 | Forensic phonetics and speech pathology. |
| | *Reading:* TBA. |
| | **Final project due Thursday, December 8, by 4:30, at Stevenson 253** |