Syllabus:
Research Methods in Phonetics and Laboratory Phonology (LING 422)

Linguistics 422 (Moreton)*

2018 August 21 (T)

1 Course information

Instructor:	Elliott Moreton Smith Building, Room 101 `moreton@unc.edu` Office hours: W 10–12, and by appointment
Class:	MW 3:30–4:45 Dey 304
Textbooks:	Schwartz, Randall L., brian d foy, and Tom Phoenix. 2016. *Learning Perl*, 7th edition. Sebastopol, Calif.: O'Reilly. Ladefoged, Peter. 2003. *Phonetic data analysis: an introduction to fieldwork and instrumental analysis techniques.* Cambridge, Mass.: Blackwell.
Website:	`http://www.unc.edu/~moreton/Ling422/422log.html`

2 Course objectives

This course is primarily aimed at students who are interested in pursuing lab or field projects in phonetics and phonology. By the end of the course, students should understand the life cycle of a typical experiment in speech production or perception, and be able to shepherd a project through that entire life cycle.

Much of the course will be devoted to learning practical skills needed to do this, including

- The *Perl programming language*. It is useful at every stage of an experiment for automating repetitive tasks, making possible projects that would otherwise be impractically huge.
- Using *lexical databases* to control stimuli for phonotactics, neighborhood, frequency, etc.
- Using *Praat* and other software to run experiments in speech production and perception
- Using survey software to run simple experiments on the Web.
- Large-scale manipulation of audio files using *Praat scripting*.

- Using soldering tools to make *audio connector cables*.

Additional topics will depend on student research interest, such as

- Static palatography
- Nasal and oral airflow measurement
- Electroglottography
- Speech synthesis
- Learning simulations

Warning: Everyone *must* learn how to use a soldering iron to make cables for connecting audio components together. Soldering irons are hot and can hurt you. If you touch the tip, you can get a small but potentially nasty burn. If you let the tip touch the power cord, it can burn through the insulation and give you a potentially *very* nasty shock, or start a fire. We will be taking the appropriate safety precautions, but there is no way to reduce the risk to zero. If you do not want to take that risk, *now* is the time to bail!

3 Prerequisites

This course is open to graduate and undergraduate students. The prerequisite or corequisite is *one* of the following courses: Linguistics 520 (Phonetics), Linguistics 200 (Sound Patterns in Language), Linguistics 523 (Phonology I), or SPHS 540 (Speech Science).

Students should also complete the on-line human-subjects certification course[1] before starting work on their projects.

4 Course requirements

Final grades for this course will be calculated as follows:

Attendance and participation	10%
Homework (problem sets and labs)	45%
Exams (midterm, final)	20%
Project	25%

Attendance and participation: Students are supposed to come to class, do assignments (including readings) on time, and participate in class activities and discussion. Missing classes will make it hard to keep up. It will also lower your participation grade, unless due to illness or other unavoidable events.

If you miss a class, it is your responsibility to get missed materials from me or other students. Always check the website if you have been absent.

Homework: During the first half of the course (Perl), there will normally be two programming assignments every week:

- *Tuesdays*, assigned on Tuesday and due an hour before the next class, and
- *Thursdays*, assigned on Thursday and due at 3:00 p.m. on the following *Monday*.

[1] Available at `http://research.unc.edu/offices/human-research-ethics/researchers/training/index.htm`. The course now takes 4–6 hours to complete, but there is a "save game" feature.

A Thursday assignment counts for two Wednesdays. They are to be handed in electronically, using the Drop Box feature on this class's Sakai site, and will be discussed in class.

This schedule may be relaxed during the second half of the course.

Exams: There will be one midterm and one final, both cumulative. Each one counts for 10% of the final grade. The midterm will be take-home; the final will be in class.

Project: A modest semester project is also required: either a production or a perception experiment, demonstrating technical prowess. Since this class is focused on means rather than ends, the project can be an original research project of your own, or a replication of a published experiment. You may work independently or in collaboration. It is okay by me for the project to fulfill some other academic requirement, such as a thesis or a class project in another class; however, the other instructor(s) must also give their consent (please ask them to email me).

5 Collaboration and citation policy

Please *do* discuss your homework with each other. When you hand it in, make sure you credit everyone who gave you help, as well as any reference materials that aren't officially part of the course. There's no shame in consulting others, and it won't hurt your grade. However, the work itself should be your own — homework and exam problems are for solving, not for looking up the answers to! *As always, the Carolina Honor Code*[2] *is in effect, and I will take violations seriously.*

6 Late-assigment policy

As a general rule, *no late assignments will be accepted for credit.* Exceptions *may* be made if

- You got advance permission (by asking me *before* the due date) to hand in an assigment late, or
- You couldn't come to campus on the day the assignment is due because of a serious illness or other unexpected emergency. You need to get the assignment in at the earliest possible opportunity with a *written explanation* of the situation. Email is best, because it's fastest.

[2] `http://instrument.unc.edu`

7 Tentative schedule

Week	Date		Topics
1	8/21	T	Syllabus; installing Perl.
	8/23	Θ	
2	8/28	T	Scalars and basic control structures.
	8/30	Θ	
3	9/4	T	Lists and arrays. Intro to lexical databases.
	9/6	Θ	
4	9/11	T	Arrays and sorting. Output formatting.
	9/13	Θ	
5	9/18	T	Hashes.
	9/20	Θ	
6	9/25	T	Regular expressions I: Writing regexps.
	9/27	Θ	
7	10/2	T	Regular expressions II: Using regexps.
	10/4	Θ	
8	10/9	T	Working with multiple files.
	10/11	Θ	
9	10/16	T	Subroutines and take-home MIDTERM
10	10/23	T	Perception experiments I: Stimulus manufacture. Praat
	10/25	Θ	scripting.
11	10/30	T	Perception experiments II: Running perception experiments
	11/1	Θ	and processing data.
12	11/6	T	Production experiments I.
	11/8	Θ	
13	11/13	T	Production experiments II.
	11/15	Θ	
14	11/20	T	Making audio cables.
15	11/27	T	Project presentations.
	11/29	Θ	
16	12/04	T	Project presentations.
	12/7	F	FINAL EXAM
	(noon)		