Ling 520/220 Introduction to experimental phonetics                     Fall 2022

## Syllabus

**Professor**: Jianjing Kuang [tɕiɛn�˥ tɕiŋ˥ kʰuɑŋˊ]
**Emai**l: kuangj@ling.upenn.edu
**Office hours**: TBA
Phonetics lab: https://web.sas.upenn.edu/phonetics-lab/
My website: https://www.sas.upenn.edu/~kuangj/Home.html

**Course level:**

Open to freshmen and upperclassmen. **This course fulfills physical world sector.**

**Class meetings**:
lectures:           Monday/Wednesday 10:15 AM– 11:45 AM EST
Lab:                Wednesday 10:15 AM – 11:45 AM EST

**Course website:** https://canvas.upenn.edu/courses/1674950 (login with pennkey)
- Weekly postings of class recordings and lectures notes
- Weekly postings of assignments, readings, audio files
- Links to external resources
- You are responsible for knowing what is due when. Updated course schedule will be announced on the course website.

**Piazza Discussion board:**
- Click on the Piazza link on the left panel of course website to enroll.
- Post questions relating to course content, lectures, readings, homework, etc. on the Piazza discussion board. This way, all can benefit from the posted questions and answers.

**Textbooks (optional).** Readings will be mainly assigned from the bolded texts:
- **Peter Ladefoged,** *A course in Phonetics***, 7th edition**
- **Keith Johnson,** *Acoustic and Auditory Phonetics***, Blackwell's**
- Bryan Gick, Ian Wison, Donald Derrick, *Articulatory Phonetics*
- Peter Ladefoged, *Elements of acoustic phonetics*, U. Chicago Press, 2nd ed. 1996 (basic acoustics, and introduction to Digital Signal Processing)
- Ray Kent and Charles Read, *The Acoustic Analysis of Speech*, Singular Publishing, 2nd. 2001. (good book on acoustics and spectrograms.)
- B.H. Baayen, *Analyzing Linguistic Data: A Practical Introduction to Statistics using R*

**Software used in this class (bolded ones are required for labs):**
- Audio:
  - **Praat**: free, http://www.fon.hum.uva.nl/praat/
  - **Audacity**: free, good for recording and editing sounds
  - PCQuire: in the phonetics lab, good for multi-channel recordings
  - WaveSurfer: free, good for sound visualization and manipulation
  - VoiceSauce: free, good for analyzing voice quality
- Statistics:
  - **R**: http://www.r-project.org/ (required for graduate students)

**Topics and goals**:

This course will introduce you the experimental study of linguistic phonetics: how we speak and understand speech. We will cover three subareas of phonetics: (i) *articulatory phonetics* (how the lungs, vocal tract, tongue and mouth are used to produce speech); (ii) *acoustic phonetics* (how our speech is transmitted through the air, and how speech can be examined by translating speech signals into a visual domain), and (iii) *auditory phonetics* (how we perceive air pressure changes as sounds, and how we decode the information folded in the speech signal). The lab sessions of this course will emphasize on acoustic phonetics. In this course, you will learn to use several analytical tools to analyze the acoustics of different speech sounds.

Some of the goals of this class are:
- To understand the anatomy of the vocal tract necessary for producing speech
- To understand and produce speech sounds of world languages
- To understand the acoustic properties of speech sounds
- To understand of how speech is perceived
- To learn the principles of experimental design and analysis for phonetic studies

**Outline of Assessments**
- Homework and Assignments                                                          50%
- Research project
  - Progress report 1: abstract/brief description of the topic          5%
  - Progress report 2: Literature review                                      5%
  - Progress report 3: experiment design                                    5%
  - Final presentation                                                              10%
  - Final paper                                                                        15%
- Participation                                                                          10%
- Total (course grade)                                                               100%

**More on requirements**
- *Attendance/participation:* Your active participation is necessary to do well in this course. Participation and attendance will be especially crucial when course grades fall in a gray area; these considerations may nudge a borderline course grade up or down. So, both for the sake of the overall course and for your course grade, you are strongly encouraged to attend the class. If you are in a different time zone, and have difficulty in attending the synchronous classes at the scheduled time, it is possible to arrange special synchronous sessions to interact with me. Please contact me to discuss a plan.

- *Lab assignments (50%)*: Hands-on practice is the biggest part of this course. Each lab assignments will be handed out in the lab sessions on Thursdays. You will be able to work on the assignments in small groups during the lab, but you will need to write your own lab report. **Late homework will not be accepted. You need to inform me ASAP about medical or personal emergencies that prevent you from turning in work on time.**

- *Final research project (40%)*: You will need to use the techniques you learn from this course to understand the nature of certain sounds, and their contribution to the linguistic structure. To make sure you are on the right track, you will need to submit several progress reports along the way. The first progress report about the topic is due **week 8** (Oct 22); the

second progress report with literature review is due **week 10** (Nov 5); the third progress report with your experiment design is due **week 11** (Nov 12). You should have your preliminary results at the time of final presentation (Last class). The final paper is due **December 22**. Detailed instructions on final projects will be provided in class.

- *Note: **There is no final exam for this course.***

- *Grading policy.* Grades will be changed only in the case of an actual grading error. In matters of judgment, all grades are final.

**Academic integrity:**
You will be permitted to collaborate on assignments, but you will need to write your own report. Copying other's report is not acceptable. The final paper should be an original research paper, and should follow the code of academic integrity. Data analysis should be original and previous studies should be properly cited.

See the following links for further information:
- The University's Code of Academic Integrity (this is a very useful site):
http://www.upenn.edu/academicintegrity/
- Plagiarism: What is it?
http://www.upenn.edu/academicintegrity/ai_plagiarismwhatisit.html
- Violations of Academic Integrity: What are the Consequences?:
http://www.upenn.edu/academicintegrity/ai_violations.html