Course Description:
This course presents, in a combined lecture/laboratory format, basic knowledge about speech acoustics, production, and (to a lesser extent) perception. Laboratories are to be completed outside of class (approximately 2 hrs/week on average). This is good preparation for the Speech Science First Exam, phonetics-related Qualifying Papers, or for courses in phonology. Students will write several short papers on various topics in speech science and acoustic phonetics (e.g., source-filter theory; myoelastic/aerodynamic theory of phonation, speech sound sources, among others), acoustic cues for vowels and for consonant manner, place, and voicing; perceptual processes. At the end of the semester, participants will submit a proposal for a research study (an experimental or corpus-based investigation) that makes use of the tools and/or concepts addressed in the course. Co-authored proposals among students are encouraged.

Note: This course is being taught entirely online and synchronously; as per the course schedule, we will be meeting on Mondays from 11:45am until 1:45pm (with some exceptions, noted on the preliminary schedule), with all meetings taking place on Zoom.

Course Learning Goals:
Students in this course will gain specialized knowledge related to the study of speech production, including source-filter theory and the acoustic analysis of vowels and constants. Students will also learn to communicate experimental designs and results in a concise (but informative) way, in both written and oral forms.

Texts: Please purchase the first two books. I will provide you with the necessary readings from the other texts, although you will likely want to own them in the long run (Baken & Orlikoff in particular is the kind of book you pull down from the shelf on a regular basis for years). See also the other readings (and optional follow-up readings) on the last page of the syllabus.

1. Kent, R.D., & Read, C. (1st or 2nd edition). The Acoustic Analysis of Speech. San Diego: CA: Singular. (Chapters listed on this syllabus are from the first edition, but the ordering of chapters should be the same for both 1st and 2nd).

2. Raphael, L. J., Borden, G. J. & Harris, K. S. [4th, 5th, or 6th Ed.] Speech Science Primer: Physiology, Acoustics, and Perception of Speech. Baltimore, MD: Lippincott Williams and Wilkins. (The readings I list in the syllabus are from the 5th edition; if you have the 4th or 6th, the chapters are a little different, so contact me to determine the equivalent if you’re using one of those editions).


IPA sites:

You are expected to know, or learn, the International Phonetic Alphabet (IPA). If you don’t know it already, please begin learning it. These are two interactive sites for hearing examples of the sounds of the IPA:

http://www.phonetics.ucla.edu/course/chapter1/chapter1.html

http://www.yorku.ca/earmstro/ipa/

https://tanakayu.doshisha.ac.jp/teaching.html

The following site has the sounds along with either ultrasound or MRI images of the tongue:

http://www.seeingspeech.arts.gla.ac.uk/display.php?chart=1&datatype=2&speaker=4

You can download an app here:
https://www.uvic.ca/humanities/linguistics/resources/software/ipaphonetics/index.php

Bases for Evaluation of Students

Your grade will be based on performance on papers, laboratory reports and a proposal for a study (one which you will hopefully be able to execute after the class). 46% of the grade will come from the average of six lab reports, 46% from the average of papers 1 through 4, and 8% from your grade on Paper 5 (which is your written proposal). Grades will be on an A-F scale (A = 4; B = 3, etc.). Late papers and reports receive a one-grade deduction.
<table>
<thead>
<tr>
<th>Wk</th>
<th>Class Date</th>
<th>Topic</th>
<th>Assignments/Readings due start of each class</th>
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<tbody>
<tr>
<td>1</td>
<td>1 Feb</td>
<td>Introduction and overview (and assessment of everyone’s previous work in phonetics). Review of articulatory phonetics and the IPA, phonetic inventory</td>
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<td>2</td>
<td>8 Feb</td>
<td>Source-Filter Theory of Speech Production, sound sources &amp; resonators, quasi-periodic sources, quarter-wave resonators and 2-tube models</td>
<td>Lab 1: Praat Exercise (no report required) Reading: Kent and Read (Ch1-2)</td>
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<td></td>
<td>(15 Feb)</td>
<td>Happy Presidents Day! No Class Meeting</td>
<td>Paper 1: Source-Filter Theory/Vowel Production Reading: Kent &amp; Read (Ch3-4)</td>
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<td>3</td>
<td>22 Feb</td>
<td>(More) Source-Filter Theory; Vowel Acoustics/Articulation; (More) speaker differences, temporal characteristics</td>
<td>Lab 2: Analysis of vowels I Reading: Garellek (2019)</td>
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<td>4</td>
<td>1 March</td>
<td>Generation of Sound Sources: Respiration &amp; Phonation Speech breathing &amp; laryngeal control, speaker differences; f0</td>
<td>Lab 3: Analysis of vowels II Readings: Raphael et al. (Ch6); Baken &amp; Orlikoff (Ch7, pp.274-277)</td>
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<td>5</td>
<td>8 March</td>
<td>Consonant Acoustics/Articulation: Voicing in fricatives and stops, spectral and temporal cues; phonotactic variation, VOT, closure cues, release cues, preceding vowel duration</td>
<td>Lab 4: Voicing in fricatives and stops Reading: Davidson (2016)</td>
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<td>7</td>
<td>22 March</td>
<td>Manual and automatic methods for measuring segmental durations; other tools for processing phonetic data</td>
<td>Lab 5: Place of articulation in consonants Reading: Kent &amp; Read (Ch6)</td>
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<td>8</td>
<td>5 April</td>
<td>Consonant Acoustics/Articulation: Place in approximants, formant transitions &amp; loci; Place in fricatives, noise spectra, spectral peaks, coarticulatory effects</td>
<td>Reading: Shattuck-Hufnagel (2019)</td>
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<td>10</td>
<td>19 April</td>
<td>Phrasing/grouping, pausing &amp; disfluency; prosody in relation to speech production planning</td>
<td>Lab 6: Stop place perception Reading: Dupoux et al. (1999)</td>
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<td>11</td>
<td>26 April</td>
<td>[Special Topics] Speech intelligibility: acoustic correlates of “clear speech” (with applications to bilingualism and disordered speech)</td>
<td>Paper 5: Written project proposals</td>
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<td>12</td>
<td>3 May</td>
<td>[Special Topics] Top-down Speech Perception</td>
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<td>13</td>
<td>10 May</td>
<td>Presentations of project proposals</td>
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<td>14</td>
<td>17 May</td>
<td>Reading Day (No Class Meeting)</td>
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<td>15</td>
<td>24 May</td>
<td>Exam Week; Submit proposals via email by end of day 5/28</td>
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Papers listed on the Weekly Schedule

**Week 4**

  **Optional follow-ups for those interested:**

**Week 6:**

  **Optional follow-ups for those interested:**

**Week 7:**

  **Optional follow-ups for those interested:**

**Week 8:**

  **Optional follow-ups for those interested:**
Week 9:
  
  **Optional follow-ups for those interested:**

Week 11:
  
  **Optional follow-ups for those interested:**

Week 12:
  
  **Optional follow-ups for those interested:**