Instructor: Dr. Suzanne van der Feest
svanderfeest@gc.cuny.edu
Office Hours: Thursdays 10:45am-11:45am, or on Zoom by appointment

COURSE DESCRIPTION
This course presents basic knowledge about speech acoustics, production, and perception in a combined lecture/laboratory format. 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.

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 consonants. 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, (as well as listed articles) although you may want to own them in the long run.


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 some 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

Basis for Evaluation of Students
Your grade will be based on performance on papers, laboratory reports and a take-home final.
Half the grade will come from the average of papers, half from lab reports. You will have one
opportunity to rewrite one paper that got less than a B for an increase in the grade. The take-
home final will be equivalent in weight to a paper, and will be included in that portion of the
grade. Grades will be on an A-F scale (A = 4; B = 3, etc). Late papers and reports receive a one-
grade point deduction.
**TENTATIVE SCHEDULE**

*These are my current plans and objectives (Jan 2022). As we go through the semester, these plans may need to change to enhance learning opportunities for the class. Such changes, communicated clearly, are not unusual and should be expected.

<table>
<thead>
<tr>
<th>Week</th>
<th>Class Date</th>
<th>Topic</th>
<th>Assignments due start of each class.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3 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>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10 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 <em>(no report required)</em></td>
</tr>
<tr>
<td>3</td>
<td>17 Feb</td>
<td>(More) Source-Filter Theory; Vowel Acoustics/Articulation; (More) speaker differences, temporal characteristics</td>
<td>Lab 2: Analysis of vowels I</td>
</tr>
<tr>
<td>4</td>
<td>24 Feb</td>
<td>Generation of Sound Sources: Respiration &amp; Phonation Speech breathing &amp; laryngeal control, speaker differences</td>
<td>Paper 1: Source-Filter Theory of Vowel Production</td>
</tr>
<tr>
<td>5</td>
<td>3 March</td>
<td>Modulation of the laryngeal source: Lexical stress and intonation, f0 and amplitude control; segmental durations in relation to prosodic structure</td>
<td>Lab 3: Analysis of vowels II</td>
</tr>
<tr>
<td>6</td>
<td>10 March</td>
<td>Consonant Acoustics/Articulation: Voicing in fricatives and stops, spectral and temporal cues; phonotactic variation, VOT, closure cues, preceding vowel duration</td>
<td>Lab 4: Voicing in fricatives and stops</td>
</tr>
<tr>
<td>7</td>
<td>17 March</td>
<td>Consonant Acoustics/Articulation: Manner of articulation, noise duration, silence, nasal murmur, transition and closure duration</td>
<td>Paper 2: The voice source</td>
</tr>
<tr>
<td>8</td>
<td>24 March</td>
<td>Consonant Acoustics/Articulation: Place in approximants, formant transitions &amp; loci</td>
<td>Paper 3: Prosody</td>
</tr>
<tr>
<td>9</td>
<td>31 March</td>
<td>Consonant Acoustics/Articulation: Place in fricatives, noise spectra, spectral peaks, coarticulatory variations</td>
<td>Lab 5: Place of articulation in consonants</td>
</tr>
<tr>
<td>10</td>
<td>7 April</td>
<td>(More, round up) Consonant Acoustics/Articulation</td>
<td>Paper 4: Place of articulation in consonants</td>
</tr>
<tr>
<td>11</td>
<td>14 April</td>
<td>Perception of Vowels and Consonants</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>21 April</td>
<td>Spring Break <em>(no class)</em></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>28 April</td>
<td>Speech Science in Clinical Practice</td>
<td>Papers / labs / data discussion</td>
</tr>
<tr>
<td>13</td>
<td>5 May</td>
<td>Child Language Acquisition Issues</td>
<td>Papers / labs / data discussion</td>
</tr>
<tr>
<td>14</td>
<td>12 May</td>
<td>Round up &amp; discussion</td>
<td>Prepare for Finals</td>
</tr>
<tr>
<td>15</td>
<td>19 May</td>
<td>Exam Week <em>(Details TBA)</em></td>
<td></td>
</tr>
</tbody>
</table>
**Reading Assignments**

I will provide you with pdfs of all listed research articles and copies of readings from the optional books.

Week 2: Complex Sounds and Visual Representations
1. Kent & Read: Ch 1-2
3. Ladefoged: Ch 1-4 (for background in phonetics if you don’t have it)

Week 3: Source-Filter Theory of Speech (Vowel) Production
1. Kent & Read: Ch 3-4
2. Raphael et al.: Ch 3 & 6

Week 4-5: Speech Sound Source: Respiration & Phonation, Prosodic Variations
1. Raphael et al.: Ch 4-5
2. Baken & Orlikoff: Ch 6 & 10 (Vocal Fundamental Frequency, Laryngeal Function)
5. Turk, Nakai, & Sugahara (2006, optional)

Week 6: Consonant Acoustics and Articulation: Manner of articulation
1. Kent & Read: Ch 5
2. Baken & Orlikoff: Ch 7: pp 266-274
3. Pickett: Ch 6-7

Week 7: Consonant Acoustics and Articulation: Voicing
1. Pickett Ch 8
2. Baken & Orlikoff, Ch 7 pp 274-277
3. Kent & Read, Ch 5

Week 8-10: Consonant Acoustics and Articulation: Place of Articulation
1. Raphael et al. Ch 7
2. Pickett, Ch 9-10
3. (suggested rereading: Kent & Read, Ch 5)

Week 11-12: Perception of Vowels and Consonants: Issues and Theories
1. Pickett, Ch 11, 12 & 14
2. Raphael et al, Ch 10-11

Week 12: Speech Science in Clinical Practice
Reading TBA

Week 13: Acquisition
Reading TBA

Week 14: No reading