Speech Science

COMD 6305, Fall 2020

“Wed/Fri (1:00 – 2:15pm)” -- online

Professor: William F. Katz (x3188) wkatz@utdallas.edu
Office hours: as needed – by email or phone
TA: TBA
Office hours: By appointment
Pre-requisites: None. However, Phonetics (SPAU 3343) and Anatomy & Physiology of Speech and Hearing (SPAU 3344) are useful background.

Course description: This course provides a review of the anatomy, physiology, and functional organization of speech. The goal is to provide students with an understanding of the mechanisms of healthy speech production and perception so that this information may be applied clinically to individuals with difficulty in speech, language, and hearing.

COURSE REQUIREMENTS

Course policy:

We are following a blended (hybrid) online course structure – Online activity (recorded lectures) is mixed with face-to-face meetings (online) via videoconferencing. All lectures can be viewed online, asynchronously (self-study). We will meet online for class discussion and learning activities. These class meetings will also be recorded for anyone who must view asynchronously.

Class participation is encouraged for a (small) bonus participation grade. This can include posting questions on the Discussion board, joining the chat, or otherwise contributing to the online sessions. There will be online quizzes in eLearning, two article summaries, four on-line exams, and lab activities.

Grading: The course is pass/fail. A score of 80% or better is required to pass. The grading breakdown is:

• 10% participation, 25% online quizzes; 25% article summaries; 40% in-class exams.


Class materials: Materials will be posted in the course site on Blackboard Collaborate. Links will include video lectures (hosted in BOX). As a backup, the Courses section of my webpage (https://www.utdallas.edu/speech-production-lab/teaching/courses/speech-science/) gives you access to the lecture PPT slides, links, and many other relevant materials. To use the webpage while off campus, you must log in with your UTD credentials.

Classroom citizenship: Remember to keep your microphone muted until you participate. Always show up on time and kindly let us know if you won’t be able to attend. Thanks for your understanding.
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topics</th>
<th>Format</th>
<th>Text / PPT-video</th>
<th>Activities</th>
<th>Assignments</th>
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</thead>
<tbody>
<tr>
<td>8/19</td>
<td>Weds</td>
<td>What is speech science?</td>
<td>Group – online (go)</td>
<td>--</td>
<td>Introductions</td>
<td>Begin text, peruse website</td>
</tr>
<tr>
<td>8/21</td>
<td>Fri</td>
<td>The nature of sound: basic concepts, waves</td>
<td>Self-study (ss)</td>
<td>Chap 1</td>
<td>View/study video lecture and text</td>
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<tr>
<td>8/26</td>
<td>Weds</td>
<td>The nature of sound: basic concepts, waves</td>
<td>go</td>
<td>Chap 1</td>
<td>PhET demos breakouts session</td>
<td>Quiz 1</td>
</tr>
<tr>
<td>8/28*</td>
<td>Fri</td>
<td>Resonance, formants, filtering</td>
<td>ss</td>
<td>Chap 1</td>
<td>Disc. of PPT Resonance demos, toys and electrolarynx</td>
<td>Quiz 2</td>
</tr>
<tr>
<td>9/2</td>
<td>Weds</td>
<td>Resonance, formants, filtering</td>
<td>go</td>
<td>Chap 1</td>
<td>Class overview</td>
<td></td>
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<tr>
<td>9/4</td>
<td>Fri</td>
<td>Respiratory system</td>
<td>ss</td>
<td>Chap 2</td>
<td>More resonance</td>
<td>Quiz 3 over Ch. 2 and pages 88 - 96</td>
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<tr>
<td>9/9</td>
<td>Weds</td>
<td>Respiratory system</td>
<td>go</td>
<td>Chap 2</td>
<td>More resonance</td>
<td>Quiz 4 over Ch 3</td>
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<tr>
<td>9/11</td>
<td>Fri</td>
<td>Respiratory system – clinical apps</td>
<td>ss</td>
<td>Chap 3</td>
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<tr>
<td>9/16</td>
<td>Weds</td>
<td>Respiratory system – clinical apps</td>
<td>go</td>
<td>Chap 3</td>
<td>More resonance</td>
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<tr>
<td>9/18</td>
<td>Fri</td>
<td>Phonatory/Laryngeal system</td>
<td>ss</td>
<td>Chap 4 – after exam</td>
<td>Larynx project assigned</td>
<td>EXAM 1 (Ch 1,2, 3)</td>
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<tr>
<td>9/23</td>
<td>Weds</td>
<td>Phonatory/Laryngeal system</td>
<td>go</td>
<td>Chap 4</td>
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<tr>
<td>9/25</td>
<td>Fri</td>
<td>Phonatory/Laryngeal system</td>
<td>ss</td>
<td>Chap 4</td>
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<tr>
<td>9/30</td>
<td>Weds</td>
<td>Phonatory/Laryngeal system</td>
<td>go</td>
<td>Chap 4</td>
<td>Praat software Acoustic labs /Voice quality</td>
<td>Quiz 5 over Ch. 4</td>
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<tr>
<td>10/2</td>
<td>Fri</td>
<td>Phonatory/Laryngeal system – clinical apps</td>
<td>ss</td>
<td>Chap 5</td>
<td>1st ARTICLE SUMMARY DUE</td>
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<tr>
<td>10/7</td>
<td>Weds</td>
<td>Phonatory/Laryngeal system – clinical apps</td>
<td>go</td>
<td>Chap 5</td>
<td></td>
<td>Quiz 6 over Chap 4 and 5</td>
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<tr>
<td>10/9</td>
<td>Fri</td>
<td>Articulatory/resonance system</td>
<td>ss</td>
<td>Chap 6</td>
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<tr>
<td>11/4</td>
<td>Weds</td>
<td>Articulatory/resonance system</td>
<td>go</td>
<td>Chap 6</td>
<td></td>
<td>Quiz 7 over Chap 6</td>
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<tr>
<td>10/14</td>
<td>Weds</td>
<td>Articulatory/resonance system</td>
<td>go</td>
<td>Chap 6</td>
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<tr>
<td>10/16</td>
<td>Fri</td>
<td>Articulatory/resonance system – clinical apps</td>
<td>ss</td>
<td>Chap 7</td>
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<tr>
<td>10/21</td>
<td>Weds</td>
<td>Articulatory/resonance system – clinical apps</td>
<td>go</td>
<td>Chap 7</td>
<td>3D vocal tract demo</td>
<td>Quiz 8 over Chaps 6 and 7</td>
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<tr>
<td>10/23</td>
<td>Fri</td>
<td>Auditory system</td>
<td>ss</td>
<td>Chap 8 – after the exam</td>
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<td>EXAM 2 (Ch, 4,5,6,7)</td>
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<tr>
<td>10/28</td>
<td>Weds</td>
<td>Auditory system</td>
<td>go</td>
<td>Chap 8</td>
<td>Hearing loss demonstration</td>
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<tr>
<td>10/30</td>
<td>Fri</td>
<td>Auditory system – clinical apps</td>
<td>ss</td>
<td>Chap 9</td>
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<tr>
<td>11/4</td>
<td>Weds</td>
<td>Auditory system – clinical apps</td>
<td>go</td>
<td>Chap 9</td>
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<td>Quiz 9 over Chaps 8 and 9</td>
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<td>11/6</td>
<td>Fri</td>
<td>Nervous system</td>
<td>ss</td>
<td>Chap 10</td>
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<tr>
<td>11/11</td>
<td>Weds</td>
<td>Nervous system</td>
<td>go</td>
<td>Chap 10</td>
<td>View a human brain!</td>
<td>Quiz 10 over Chap 10</td>
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<tr>
<td>11/13</td>
<td>Fri</td>
<td>Nervous system – clinical apps</td>
<td>ss</td>
<td>Chap 11</td>
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<td>Quiz 11 over Chap 11</td>
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<td>11/18</td>
<td>Weds</td>
<td>Nervous system – clinical apps</td>
<td>go</td>
<td>Chap 11</td>
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<td>11/20</td>
<td>Fri</td>
<td>Models and theories of speech production and perception</td>
<td>ss</td>
<td>Chap 12</td>
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<td>2nd ARTICLE SUMMARY DUE</td>
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<tr>
<td>11/25</td>
<td>Weds</td>
<td>Models and theories of speech production and perception</td>
<td>go</td>
<td>Chap 12</td>
<td>Run DIVA/GODIVA models</td>
<td>Quiz 12 over Chap 12</td>
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<td>12/2</td>
<td>Finals Week</td>
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This course has been designed to ensure that students demonstrate required knowledge and skill as outlined in the Standards and Implementation Guidelines for the Certificate of Clinical Competence in Speech-Language Pathology. The specific standards addressed in this class are: III-B, III-C, III-E, IV-B, IV-G.

After completing the course students should be able to:

1) Identify the anatomy of the speech production mechanism. (III-B)
2) Discuss and explain speech respiration, phonation, and resonance. (III-B)
3) Describe the neural basis of speech production and perception. (III-B)
4) Show abilities of basic acoustic speech analysis, including speech digitizing, playback, and spectrographic analysis. (III-B, III-C, IV-B, IV-G).
5) Analyze and classify spectrograms of American English, including key features of place, manner, and voicing. (III-B).
6) Discuss and contrast theories of speech perception (III-B, III-C).
7) Identify properties of speech science relevant to speech pathology practice. (III-C, III-E, IV-B, IV-G).

ASHA STANDARDS ADDRESSED IN THIS CLASS: How knowledge is conveyed and how knowledge and skill acquisition will be demonstrated

**Standard III-B**
The applicant must demonstrate knowledge of basic human communication and swallowing processes including their biological, neurological, acoustic, psychological, developmental, linguistic and cultural bases. Specific knowledge will be demonstrated in this class in the area of speech science.

*Knowledge will be conveyed via class lectures and readings. Acquisition will be demonstrated via class discussions and exams.*

**Standard III-C**
The applicant must demonstrate knowledge of the nature of speech, language, hearing, and communication disorders and differences and swallowing disorders, including the etiologies, characteristic, anatomic/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates. Specific knowledge will be demonstrated in this class in the area of speech science.

*Knowledge will be conveyed via class lectures, readings, and required videotape viewing. Acquisition will be demonstrated via class discussion and exams.*

**Standard III-E**
The applicant must demonstrate knowledge of standards of ethical conduct.

*Knowledge will be conveyed via class lectures. Acquisition will be demonstrated via class discussion.*

**Standard IV-G**
The applicant for certification must complete a program of study that includes supervised clinical experiences sufficient in breadth and depth to achieve the following skills outcomes (in addition to clinical experiences, skills may be demonstrated through successful performance on academic coursework and examinations, independent projects or other appropriate alternative methods). Specific knowledge will be demonstrated in this class in the area of speech science.

*Knowledge will be conveyed via lectures and readings. Acquisition will be demonstrated via class discussion and exams.*

**Students will demonstrate the following skills:**

1. Describe the anatomy of the speech production mechanism. (III-B)
   As measured by:
   - Successful completion of exams
   - Class discussion
2. Discuss and explain speech respiration, phonation, and resonance. (III-B)
   As measured by:
   - Successful completion of exams
   - Class discussion
3. Demonstrate understanding of the neural basis of speech production and perception. (III-B)
   As measured by:
Successful completion of exams
Class discussion

4. Be capable of conducting basic acoustic speech analysis, including speech digitizing, playback, and spectrographic analysis. (III-B, III-C, IV-B, IV-G).
   As measured by:
   - Successful completion of exams
   - Homework assignments
   - Class discussion
   - Homework assignments

5. Analyze and classify spectrograms of American English, including key features of place, manner, and voicing. (III-B).
   As measured by:
   - Successful completion of exams
   - Class discussion

   As measured by:
   - Successful completion of exams
   - Class discussion

   As measured by:
   - Successful completion of exams
   - Class discussion

Student Resources

Access to many University resources are available to students. Some sources of interest include:

UTD Distance Learning: [http://www.utdallas.edu/distancelearning/students](http://www.utdallas.edu/distancelearning/students)

McDermott Library: Distance Learners (UTD students who live outside the boundaries of Collin, Dallas, Denton, Rockwall, or Tarrant counties) will need a UTD-ID number to access all of the library’s electronic resources (reserves, journal articles, ebooks, interlibrary loan) from off campus. For UTD students living within those counties who are taking online courses, a Comet Card is required to check out materials at the McDermott Library. For more information on library resources go to [http://www.utdallas.edu/distancelearning/students/libraries.html](http://www.utdallas.edu/distancelearning/students/libraries.html)

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to [http://go.utdallas.edu/syllabus-policies](http://go.utdallas.edu/syllabus-policies) for these policies.

These descriptions and timelines are subject to change at the discretion of the Professor.