

Syllabus COMD 6401-001

Speech Science

Fall, 2022

Class Time: Weds 2:30-3:45
Fri 1:00 – 2:15
Location: CD1 B.108 (Callier Dallas)

Professor Contact Information

Instructor: William Katz (972 883-9005)

Email: wkatz@utdallas.edu

Office hours: I can be contacted by email/Teams to set up appointments before/after class and as needed.

Teaching assistant: Rana Moustafa

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Office hours: TBA

Course Pre-requisites, Co-requisites, and/or Other Restrictions

None. However, *Phonetics* (SPAU 3343) and *Anatomy & Physiology of Speech and Hearing* (SPAU 3344) are useful as 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.

Objectives:

- Critical Thinking (CT)**—to include creative thinking, innovation, inquiry, and analysis, evaluation, and synthesis of information
- Communication (COM)**—to include effective development, interpretation, and expression of ideas through written, oral, and visual communication
- Empirical and Quantitative Skills (EQS)**—to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Social Responsibility (SR)**—to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

Requirements

To succeed in class, you must read/study on your own, attend lectures, participate in “pair/share” activities, complete two written reports, and do well in tests (quizzes,

exams). Class participation is required and is tracked for a participation grade. Other ways to participate include joining the online Discussion Forum and volunteering for class activities (e.g., “extreme speech science” presentations).

Required Textbooks and Materials

Ferrand, Carole T. (2017). *Speech Science: An integrated approach to theory and clinical practice. 4th Edition.* NY: Pearson.

Suggested Course Materials

Hixon, T., Weismer, G., and Hoit, J.D. (2020). *Preclinical speech science: Anatomy, physiology, acoustics, and perception.* Plural publishing. 978-1635500615

Assignments & Academic Calendar

*Last day to drop without a 'W'

*Guest lecture

Date	Day	Topics	Text / PPT-video	Activities	Assignments
8/24	Weds	First class -- meet and greet - <i>What is speech science?</i>	--	Introductions Class overview	Begin text, peruse website
8/26	Fri	The nature of sound: basic concepts, waves	Chap 1	View/study video lecture and text	
8/31	Weds	The nature of sound: basic concepts, waves – cont'd	Chap 1	PhET demos breakouts session	Quiz 1
9/2	Fri	Resonance, formants, filtering	Chap 1		
9/7*	Weds	Resonance, formants, filtering– cont'd	Chap 1	Disc. of PPT Resonance demos, toys and electrolarynx	Quiz 2 Chap 1 B, C and 223-234
9/9	Fri	Respiratory system	Chap 2		
9/14	Weds	Respiratory system– cont'd	Chap 2	More resonance	Quiz 3 over Ch. 2 and pages 88 - 96
9/16	Fri	Respiratory system – clinical apps	Chap 3		
9/21	Weds	Respiratory system – clinical apps– cont'd	Chap 3	Spirometer demo Case studies Larynx project assigned	Quiz 4 over Ch 3
9/23	Fri	Phonatory/Laryngeal system	Chap 4 – after exam		EXAM 1 (Ch 1,2, 3)
9/28	Weds	Phonatory/Laryngeal system	Chap 4	Larynx project due and JUDGED	
9/30	Fri	Phonatory/Laryngeal system– cont'd	Chap 4		
10/5*	Weds	Phonatory/Laryngeal system– cont'd	Chap 4	Praat software Acoustic labs /Voice quality	Quiz 5 over Ch. 4
10/7	Fri	Phonatory/Laryngeal system – clinical apps	Chap 5		1rst ARTICLE SUMMARY DUE
10/12	Weds	Phonatory/Laryngeal system – clinical apps– cont'd	Chap 5	Case studies	Quiz 6 over Chap 4 and 5
10/14	Fri	Articulatory/resonance system	Chap 6		
10/19	Weds	Articulatory/resonance system– cont'd	Chap 6	Human suill Interactive head/neck	Quiz 7 over Chap 6

10/21	Fri	Articulatory/resonance system – clinical apps	Chap 7		
10/26	Weds	Articulatory/resonance system – clinical apps– cont'd	Chap 7	3D vocal tract demo Case studies	Quiz 8 over Chaps 6 and 7
10/28	Fri	Auditory system	Chap 8 – after the exam		
11/2	Weds	Auditory system– cont'd	Chap 8	Hearing loss demonstration	<i>EXAM 2 (Ch, 4,5,6,7)* Note - moved later because of COMPS</i>
11/4	Fri	Auditory system – clinical apps	Chap 9		
11/9	Weds	Auditory system– clinical apps– cont'd	Chap 9	Chat with a cochlear-implanted participant – LIVE!	Quiz 9 over Chaps 8 and 9
11/11	Fri	Nervous system	Chap 10		
11/16	Weds	Nervous system/ Start clin apps*	Chap 10	View a human brain!	Quiz 10 over Chap 10
11/18	Fri*	Nervous system – clinical apps– cont'd	Chap 11	Case studies – breakout sessions	Quiz 11 over Chap 11
<i>11/23 and 11/26 - Happy Thanksgiving Break WEEK</i>					
11/30	Weds	Models and theories of speech production and perception	Chap 12		2nd ARTICLE SUMMARY DUE
12/2	Fri	Models and theories of speech production and perception– cont'd	Chap 12	Run DIVA/GODIVA models	Quiz 12 over Chap 12
12/7	Weds	(Last day of classes)			EXAM 3 (Ch 8,9,10, 11,12)

Grading Policy

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.

Course Policies

Homework assignments will not be accepted late. If you must miss an exam, notify the instructor (or TA) as soon as possible. Missed exams will only be given in cases of legitimate, documented reasons (e.g., illness with a doctor's note) and must be made up within a week of the original date. For the article reports, points will be deducted from late submissions for each day that has passed since the deadline.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester.

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

Class Participation

Regular class participation is expected. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. The participation grade includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Classroom citizenship

Please no open laptops unless we are using them for an in-class project. In addition, kindly keep cell phones on mute. Thanks for your understanding.

Note: Speech science is an interdisciplinary field involving anatomy, physiology, physics, psychology, and linguistics. It is therefore important you complete the assigned readings and online assignments before each class lecture. Thanks!

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.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please see <http://go.utdallas.edu/academic-support-resources>.

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 review the catalog sections regarding the [credit/no credit](#) or [pass/fail](#) grading option and withdrawal from class.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

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
6. Integrate knowledge concerning theories of speech perception into clinical practice (III-B, III-C).
As measured by:
Successful completion of exams
Class discussion
7. Identify and apply properties of speech science to speech pathology practice. (III-C, III-E, IV-B, IV-G).
As measured by:
Successful completion of exams
Class discussion

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.