Communication Sciences and Disorders  
Department of Human Services and Ed Leadership  
James I. Perkins College of Education  
Introduction to Speech Science  
Spring 2024

Program: CSDS  
Course: 4340  
Section: 700  
Semester: Spring 2024

Instructor: Nandhu Radhakrishnan, PhD., CCC-SLP  
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Phone: 468-1337  
Email: radhakrin@sfasu.edu  
Office Hours: Wednesdays Noon to 2pm  
Thursdays 11am – 1pm

Lecture Type: Hybrid-Synchronous  
Days: MWF  
Time: 1:00-1:50 PM  
Delivery: Lectures and Labs

Prerequisites: Enrollment in the SLP Program or by consent of the instructor

I. Course Description:

Physical bases and processes of the production and perception of speech, language, and hearing, including biomechanics and the source-filter theory of speech production. This course will be taught in person and over Zoom. Apart from theoretical lectures, you will be directed to work on weekly labs related to speech science. In-class and out-of-class requirements are as follows:

- **In-class time (2.5 hours weekly):** We will meet in person on Wednesdays and via Zoom for 15 weeks in which we will study the scientific production and physiology of speech. We will cover the biomechanics of speech science, including a review of anatomy and physiology. Moreover, we will explore scientific measures used to study the physiological aspects of speech and voice production. Theoretical models of speech perception will be discussed, and the clinical application of those models will be reviewed. You may also be asked to participate in break-out rooms and other activities during the synchronous ZOOM sessions. Friday classes will be dedicated to lab work. You will be given lab sheets to work. The responses are due the same day.

- **Out-of-class time:** Outside of class, students will have significant weekly reading assignments, and are expected to complete all readings, viewings, writing assignments, and any class related activities. These include videos, group projects, readings, and conducting, analyzing, and interpreting speech science instrumentation.
• Exams will be completed during the regularly scheduled class days,

II. Intended Learning Outcomes/Goals/Objectives (Program/Student Learning Outcomes): This course reflects the following Core values of the College of Education:

The mission of the Perkins College of Education is to prepare competent, successful, caring and enthusiastic professionals from diverse backgrounds dedicated to responsible service, leadership, social justice, and continued professional and intellectual development in an interconnected global society. In the Perkins College of Education, we value and are committed to:

• Academic excellence through critical, reflective, and creative thinking
• Life-long learning
• Collaboration and shared decision-making
• Openness to new ideas, to culturally diverse people, and to innovation and change
• Integrity, responsibility, diligence, and ethical behavior
• Service that enriches the community.

This course reflects the mission of the Department of Human Services and Educational Leadership:

The Department of Human Services prepares undergraduates and graduate students for leadership and service roles in East Texas and the global community. The department is committed to incorporation of community-based, service-learning experiences within its educational programs to maximize the advancement of students’ personal and professional development.

This course supports the mission of the Speech-Language Pathology Program:

The mission of the Speech-Language Pathology Program is to prepare knowledgeable professionals committed to enhancing the quality of life of persons with communication disorders. To meet this mission, the program emphasizes the importance of scientific study, critical thinking skills, interdisciplinary collaboration, ethical principles, the responsibility to educate the public about communication disorders, and the importance of continued professional development throughout one’s career.

This course supports the following Communication Sciences and Disorders Program Learning Outcome (PLO):

I. The student will demonstrate knowledge of major anatomical structures utilized in the communication process.
II. The student will demonstrate knowledge of physiological processes utilized in communication.
III. The student will recognize and articulate the foundational skills related to normal speech and language development.
IV. The student will demonstrate an understanding of the process of assessing and treating communication disorders.
V. The student will analyze, interpret, and synthesize evidence-based procedures in the treatment of communication disorders.
VI. The student will demonstrate professional writing skills appropriate for clinical management.
This course addresses the following standards of the Council for Clinical Certification of the American Speech-Language Hearing Association (2020 Standards effective Jan 1, 2020):


**Standard IV-B:** The applicant must have demonstrated knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic cultural bases. The applicant must have demonstrated the ability to integrate information pertaining to normal and abnormal human development across the life span.

**Course-specific learning objectives** - Upon completion of this course, students will:

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>ASHA CFCC Standard</th>
<th>Assignment</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate basic understanding of simple and complex sounds and their analysis</td>
<td>IV-B</td>
<td>Classroom Lecture and Group Discussion</td>
<td>Exams, labs</td>
</tr>
<tr>
<td>Characterize the acoustic characteristics of vowels and consonants</td>
<td>IV-B</td>
<td>Classroom Lecture and Group Discussion; Project</td>
<td>Discussions; Exams; Labs</td>
</tr>
<tr>
<td>Describe anatomical and physiological bases of respiration, phonation, articulation, hearing, and the nervous system</td>
<td>IV-B</td>
<td>Classroom Lecture and Group Discussion</td>
<td>Exams; Labs</td>
</tr>
<tr>
<td>Become familiar with the appropriate recording (acoustics) procedures and relevant software for clinical use</td>
<td>IV-B</td>
<td>Classroom Lecture and Group Discussion; Project</td>
<td>Paper; Exams</td>
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</tbody>
</table>

**III. Course Assignments, Activities, Instructional Strategies, use of Technology:**

Each ZOOM synchronous class period will consist of either a lecture or discussion format, with some sessions culminating in group activities and/or practice of course components. Open discussion of topic materials and questions are greatly encouraged. Please be an active consumer of this course. Read required chapters and peer-reviewed publications ahead of time and come prepared to discuss them in class. Ask questions, be willing to share experiences, and express concerns. Audiovisual stimuli and other electronic media will be utilized to foster knowledge acquisition of the study area. This course will employ aspects of distance learning technology which will include video presentations and correspondence online. Please download and install the following free software Praat: Doing Phonetics by Computer

https://www.fon.hum.uva.nl/praat/

Select the appropriate one based on your operating system. You will need to bring your laptop to class to better understand how this software works.
IV. Evaluation and Assessments (Grading):

Calculation of grades. Your overall point value will determine your letter grade as described:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Points*</th>
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<tbody>
<tr>
<td>Exam 1 – Basics of Sound (Ch.1-3)</td>
<td>25</td>
</tr>
<tr>
<td>Exam 2 – Articulation I – Vowels, Diphthongs, Consonants (Ch.7, 8)</td>
<td>25</td>
</tr>
<tr>
<td>Exam 3 – Respiration (Ch.4)</td>
<td>25</td>
</tr>
<tr>
<td>Exam 4 – Phonation (Ch.5,6)</td>
<td>25</td>
</tr>
<tr>
<td>Exam 5 – Prosody &amp; Theories (Ch.9-11)</td>
<td>25</td>
</tr>
<tr>
<td>Labs using software</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam – COMPREHENSIVE</td>
<td>100</td>
</tr>
<tr>
<td>Research Paper (Graduate Students only)</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>325/425</td>
</tr>
</tbody>
</table>

*Note: The maximum points for this course are not guaranteed. If the lectures and labs move in a slower/faster pace, the number of labs and exams may be condensed or increased.

Grades will be assigned as follows (per SFASU regulations):

A = 90-100%; B = 80-89%; C = 70-79%; D = 60-69% and F = Below 60%

**FINAL EXAM IS COMPREHENSIVE.** Grade points are listed above and the grade you receive in the course will correspond to the letter grade shown. If you receive a .5 or higher in the course (e.g., 89.50 – 89.99), I will round your grade up to the next letter grade. I **WILL NOT** round your grade if you receive a .4 or lower in the course (e.g., 89.0 – 89.499). No exceptions. **There are no extra credit opportunities for this class.**
V. Tentative Course Outline/Calendar:*  

<table>
<thead>
<tr>
<th>Week</th>
<th>Syllabus</th>
<th>Quiz - Jan 19</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Syllabus</td>
<td>Quiz - Jan 19</td>
</tr>
<tr>
<td>Week 2</td>
<td>Intro to Sound</td>
<td>Ch1-3</td>
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<tr>
<td>Week 3</td>
<td>Sound waves</td>
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<tr>
<td>Week 4</td>
<td>Articulation - I</td>
<td>Exam 1 - Feb 7</td>
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<tr>
<td>Week 5</td>
<td>Articulation – I, II</td>
<td>Ch 7, 8</td>
</tr>
<tr>
<td>Week 6</td>
<td>Articulation - II</td>
<td>Ch 8, Exam 2 - Feb 21</td>
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<tr>
<td>Week 7</td>
<td>Breathing</td>
<td>Ch 4</td>
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<tr>
<td>Week 8</td>
<td>Breathing</td>
<td>Ch 4 - Exam 3 - Mar 6</td>
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<tr>
<td>Week 9</td>
<td>Spring Break</td>
<td>Break</td>
</tr>
<tr>
<td>Week 10</td>
<td>Phonation</td>
<td>Ch 5</td>
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<tr>
<td>Week 11</td>
<td>Phonation</td>
<td>Ch 5-6</td>
</tr>
<tr>
<td>Week 12</td>
<td>Phonation, Lab</td>
<td>Ch 6, Exam 4 - Apr 3</td>
</tr>
<tr>
<td>Week 13</td>
<td>Prosody - Perception</td>
<td>Ch 9-11</td>
</tr>
<tr>
<td>Week 14</td>
<td>Instrumentation</td>
<td>Exam 5 - Apr 17</td>
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<tr>
<td>Week 15</td>
<td>Instrumentation</td>
<td></td>
</tr>
<tr>
<td>Week 16</td>
<td>Review for Final Exam</td>
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<tr>
<td>Week 17</td>
<td>Final Exam</td>
<td>COMPREHENSIVE EXAM</td>
</tr>
</tbody>
</table>

*Course Outline subject to change. Any changes/modifications made will be discussed in class/online.

VI. Readings (Required and recommended—including texts, websites, articles, etc.):

Required:


VII. Course Evaluations:

Near the conclusion of each semester, students in the College of Education electronically evaluate courses taken within the Perkins COE. Evaluation data is used for a variety of important purposes including: 1. Course and program improvement, planning, and accreditation; 2. Instruction evaluation purposes; and 3. Making decisions on faculty tenure, promotion, pay, and retention. As you evaluate this course, please be thoughtful, thorough, and accurate in completing the evaluation. Please know that the Perkins COE faculty is committed to excellence in teaching and continued improvement. Therefore, your response is critical! In the Perkins COE, the course evaluation process has been simplified and is completed electronically through MySFA. Although the instructor will be able to view the names of students who
complete the survey, all ratings and comments are confidential and anonymous, and will not be available to the instructor until after final grades are posted.

VIII. Student Ethics and Other Policy Information:

From the instructor: This is a hybrid class offered in a synchronous format. To enhance student participation and to assess your commitment, your camera should be turned on at all times during Zoom lectures. You will be assigned to groups for lab work. Each time you may have a different partner. Please be courteous and cooperate with your group members. Put in equal effort and earn your grade.

An Institutional Absence may be granted to a student who participates as a representative of the University in academic (including research), extra- or cocurricular, or athletic activities. Students will be excused for institutional purposes from otherwise required academic activity only when a valid Institutional Absence is approved by the appropriate administrative unit or official and the documentation of approval is provided to the faculty member at least five (5) days in advance.

Institutional absences will not be approved for keystone events, defined as: a special or unique assignment, test, project, experience, or other academic exercise identified by the Faculty member as critical for successful completion of standards of the class and unable to be missed. These events must be identified on the syllabus at the beginning of the semester and communicated to the students. Events added to the syllabus at a later date will not qualify for Keystone Event status. Keystone Events where the date/time is changed will no longer be considered a Keystone Event. Students should make themselves aware of any Keystone Events identified in the syllabus to ensure there are no conflicts.

For keystone events where the assignment dates vary, it is incumbent upon the students to work with their faculty member to not select a conflicting date.

More information on Institutional Absences, including how to apply, can be found at https://www.sfasu.edu/deanofstudents/student-resources/institutional-absences.

Late Quizzes/Tests and Assignments:
Grades for your labs will be posted within two business days and exams will be graded in a week. If you are ill when a lab/exam is scheduled, be sure to leave a message via email at radhakrin@sfasu.edu. Without prior notice, students WILL NOT be able to make-up a missed lab/exam (Doctor’s note or other approved confirmation for missed lab/exam).

Acceptable Student Behavior:
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1).
Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have
full discretion over what behavior is appropriate or inappropriate in the classroom. This includes inappropriate use of laptop computers or “surfing the web” during class time and/or texting using cellphones. If this type of activity occurs, those students will lose the privilege of bringing that device to class for the remainder of the semester, period.

Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

**Code of Student Conduct and Academic Integrity:**

The Code of Student Conduct and Academic Integrity outlines the prohibited conduct by any student enrolled in a course at SFA. It is the responsibility of all members of all faculty, staff, and students to adhere to and uphold this policy.

Articles IV, VI, and VII of the new Code of Student Conduct and Academic Integrity outline the violations and procedures concerning academic conduct, including cheating, plagiarism, collusion, and misrepresentation. Cheating includes, but is not limited to: (1) Copying from the test paper (or other assignment) of another student, (2) Possession and/or use during a test of materials that are not authorized by the person giving the test, (3) Using, obtaining, or attempting to obtain by any means the whole or any part of a non-administered test, test key, homework solution, or computer program, or using a test that has been administered in prior classes or semesters without permission of the Faculty member, (4) Substituting for another person, or permitting another person to substitute for one’s self, to take a test, (5) Falsifying research data, laboratory reports, and/or other records or academic work offered for credit, (6) Using any sort of unauthorized resources or technology in completion of educational activities.

Plagiarism is the appropriation of material that is attributable in whole or in part to another source or the use of one’s own previous work in another context without citing that it was used previously, without any indication of the original source, including words, ideas, illustrations, structure, computer code, and other expression or media, and presenting that material as one’s own academic work being offered for credit or in conjunction with a program course or degree requirements.

Collusion is the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any provision of the rules on academic dishonesty, including disclosing and/or distributing the contents of an exam.

Misrepresentation is providing false grades or résumés; providing false or misleading information in an effort to receive a postponement or an extension on a test, quiz, or other assignment for the purpose of obtaining an academic or financial benefit for oneself or another individual or to injure another student academically or financially. For additional information, go to https://www.sfasu.edu/docs/hops/04-106.pdf.

**Withheld Grades Semester Grades Policy (HOP policy 02-206)**

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the
coursework because of unavoidable circumstances. Students must complete the work within
one calendar year from the end of the semester in which they receive a WH, or the grade
automatically becomes an F. If students register for the same course in future terms the WH
will automatically become an F and will be counted as a repeated course to compute the grade
point average. For additional information, go to https://www.sfasu.edu/docs/hops/02-206.pdf.

- **Students with Disabilities**
  To obtain disability-related accommodations, alternate formats, and/or auxiliary aids, students
  with disabilities must contact the Office of Disability Services (ODS), Human Services
  Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester.
  Once verified, ODS will notify the course instructor and outline the accommodation and/or
  auxiliary aids to be provided. Failure to request services promptly may delay your
  accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

- **Student Wellness and Well-Being**
  SFA values students’ overall well-being, mental health and the role it plays in academic and
  overall student success. Students may experience stressors that can impact both their academic
  experience and their personal well-being. These may include academic pressure and challenges
  associated with relationships, emotional well-being, alcohol and other drugs, identities,
  finances, etc. If you are experiencing concerns, or seeking help, SFA provides a variety of
  resources to support students’ mental health and wellness. Many of these resources are free,
  and all of them are confidential.

- **Other important course-related policies:**
  ***Other SFA policy information is found in the **Handbook of Operating Procedures (HOP)**

  **Student Code of Conduct: Policy 10.4**
  Classroom behavior should not interfere with the instructor’s ability to conduct the class or
  the ability of other students to learn from the instructional program. Unacceptable or
  disruptive behavior will not be tolerated. Students who disrupt the learning environment
  may be asked to leave class and may be subject to judicial, academic or other penalties.
  This policy applies to all instructional forums, including electronic, classroom, labs,
  discussion groups, field trips, etc. The instructor shall have full discretion over what
  behavior is appropriate/inappropriate in the classroom. Students who do not attend class
  regularly or who perform poorly on class projects/exams may be referred to the iCare:
  Early Alert Program at SFA. Information regarding the iCare program is found at
  http://www.sfasu.edu/judicial/earlyalert.asp or call the office at 936-468-2703.

  **IX. Other Relevant Course Information:**
  Communication for this course will be delivered through D2L. Communication between
  the students and instructor will be via D2L and email. Please check D2L and your SFASU
  email often to get announcements, print out handouts, check your grades, etc. Not checking
  your emails will lead to missing important relevant information.

  **Use of AI tools**
  It is common for students to search for answers online or use AI tools. Such answers may not
  directly relate to the actual information learned in this course. I strictly advise you to gather answers
  from the recommended textbook and lectures. Your answers from the above-mentioned tools will
  not be as complete as what has been taught in class.
Emergencies; Traumatic Events:
If you have experienced any of the following in the past, or are experiencing any of the following currently, please know that you are not alone:

- Sexual assault
- Intimate partner violence
- Stalking
- Sexual harassment
- Other traumatic experience

We are a family here at SFA and it is my responsibility as your professor to do my best to get you connected with the services you might need. It doesn’t matter if it is something that occurred many years ago or is recent, there are resources available to you at no cost or significantly reduced cost. Services can be provided in person and also through ZOOM.

If you are having a crisis and need assistance, please call:
911 or local hospital
National Suicide Prevention Hotline: 800-273-8255; 800-273-TALK or 800-SUICIDE Burke 24-hour Crisis Line
(Local Mental Health Authority): 800-392-8343
The Trevor Project (LGBTQ+ sensitive) 24/7 Hotline: 1-866-488-7386 and/or TrevorText (text START) to 678678 Crisis Text Line by texting HELLO to 741-741
Veterans Crisis Line: 800-273-8255 (press 1)
Trans-Hotline: 1-877-565-8860

Human Services Counseling Clinic (HSCC) http://www.sfasu.edu/humanservices/
The SFASU Counseling Clinic is a service provided by the Department of Human Services Counselor Education Programs located on the SFASU Campus in Human Services Building, Room 202. If you have questions or concerns, the HSCC can be reached by phone between the hours of 8am and 6pm Monday-Thursday at 936-468-1041. In response to the COVID-19 viral pandemic, the HSCC has temporarily waived all clinic fees.

Veterans Resource Center http://www.sfasu.edu/vrc/
Located on the first floor of the Student Center cafeteria: 936-468-6494. They are open Monday through Friday, 8am to 5pm and provide a comprehensive list of services, which include counseling services. Email: SFAVeterans@sfasu.edu

Family Crisis Center https://www.familycrisiscenterofeasttexas.com/sfasu-campus-office/
The Family Crisis Center of East Texas has partnered with SFASU for an on-campus outreach office - Located on the third floor of the McKibben Education Building, Suite 304: 936-468-SAFE (7233). They provide confidential services and support for victims of domestic violence and sexual assault. Includes services for personal advocacy, safety planning, legal advocacy, sexual assault advocacy, counseling, child advocacy, self-sufficient advocacy.

Rusk Counseling http://www.sfasu.edu/counselingservices/
Counseling services for all students – offers distance counseling. Located on the 3rd floor of the Rusk Building: 936-468- 2401; email: counseling@sfasu.edu. Office hours are
Monday through Friday from 8am to 5pm. Includes all counseling services (bilingual English-Spanish services also available).

As your professor, I am here for you and want you to get the help you need. If you would like to contact me and discuss anything, please do not hesitate to do so. If you tell me of an incident or situation whether past or present that falls under circumstances related to physical, sexual, emotional violence, I may be required (dependent on incident) to report it to Title IX office on campus. It does not go against you, it’s confidential, and your protection is of utmost importance. They simply reach out to you in an email to see if you need any support and you decide whether to take it from there.