



California State University, Sacramento

Department of Communication Sciences and Disorders

UNDERGRADUATE SYLLABUS & COURSE OUTLINE

Semester/Year: Fall 2025	Course: CSAD 110 Physics of Sound and Phonetics.	Section: 01
Meeting Days: Monday/Wednesday	Meeting Times: 2:00-3:50 PM	Location: Folsom Hall 1049 Folsom Hall 1029 (labs)
Instructor: Lisa D'Angelo, Ph.D., CCC-SLP	Email: dangelo@csus.edu	Phone: (530)400-1970 text only
Office Location: FLS 2316 (2404A)	Office Hours/Appointments: by appointment; schedule with me—tell me best times for you	

Catalogue Course Description

CSAD 110. Physics of Sound and Phonetics.4 Units

Prerequisite(s): [CHDV 30](#), [DEAF 51](#), [PSYC 2](#), and [STAT 1](#)

Corequisite(s): [CSAD 111](#)

Term Typically Offered: Fall only

Physical production, acoustic characteristics of sounds of speech. International Phonetic Alphabet as applied to speech sounds; practice in phonetic transcription of dialects and deviant speech; applications in speech education, speech and hearing therapy. Introduction to physiological acoustics, psychoacoustics, and acoustic phonetics. Perception of speech including voice, resonance, individual speech segments; instrumentation for acoustic and perceptual analysis of speech.

Place of Course in Program

This is an undergraduate course generally taken by Junior level students in the Fall. It is a requirement for the bachelor's degree in CSAD and for acceptance into the graduate program.

<u>Sacramento State Baccalaureate Learning Goals for the 21st Century (BLG)</u>	Addressed by this course (Y/N)
Competence in the Disciplines: <i>The ability to demonstrate the competencies and values listed below in at least one major field of study and to demonstrate informed understandings of other fields, drawing on the knowledge and skills of disciplines outside the major.</i>	Y
Knowledge of Human Cultures and the Physical and Natural World <i>through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts. Focused by engagement with big questions, contemporary and enduring.</i>	Y
Intellectual and Practical Skills, Including: <i>inquiry and analysis, critical, philosophical, and creative thinking, written and oral communication, quantitative literacy, information literacy, teamwork and problem solving, practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance.</i>	Y
Personal and Social Responsibility, Including: <i>civic knowledge and engagement—local and global, intercultural knowledge and competence*, ethical reasoning and action, foundations and skills for lifelong learning anchored through active involvement with diverse communities and real-world challenges</i>	Y
Integrative Learning**, Including: <i>synthesis and advanced accomplishment across general and specialized studies</i>	Y

CSAD-110 COURSE LEARNING OBJECTIVES:

1. Identify speech and acoustic analysis materials used to assess certain types of disorders.
2. Explain the interconnectedness of language, phonetics, and speech production.
3. Effectively explain the relationship between the articulatory features and acoustic features of specific speech sounds.
4. Analyze spectrograms of vowels & consonants within words & phrases.
5. Transcribe typical speech sounds using the International Phonetics Alphabet (IPA).
6. Describe the features of articulatory phonetics along with clinical and research methods in evaluating and treating articulation disorders
7. Transcribe both typical and atypical productions of the sounds of American English during live transcription exercises using IPA notation.

CSAD-110 SPECIFIC STUDENT LEARNING OUTCOMES/MODULE OBJECTIVES:

1. Students will be able to identify the physical and perceptual properties of the production of specific sounds.
2. Students will be able to both accurately identify and describe both the articulatory and acoustic properties of speech sounds (vowels, consonants, diphthongs) using verbal descriptions and graphic representations of these properties.
3. Students will be able to critically evaluate how research in speech science is applied to clinical treatment in speech pathology and audiology.
4. Students will be able to use computer resources to improve learning process.
5. Students will be able to describe the psychoacoustic correlates of sound namely pitch, loudness and timbre.
6. Students will be able to identify the role played by the critical band in the understanding of auditory information.
7. Students will demonstrate competence in transcribing normal and abnormal speech into the International Phonetic Alphabet.
8. Students will identify and transcribe phonemic versus phonetic contrasts as well as the nature of sound variation in speech production.
9. Students will label basic anatomy and physiology of the speech mechanism.
10. Students will describe the basic process of early articulation and phonology development.
11. Students will explain the difference between an articulation approach and a phonological approach evaluating and treating speech disorders.
12. Students will discern between speech differences and a disorders based on an understanding of cultural pronunciation differences.
13. The student will be able to accurately describe the theory and practice of physiologic, psychoacoustic, acoustic and perceptual phonetics.

Mastery of each student-learning outcome listed below is indicated by a grade of C or better on each component of the corresponding measures listed in the table. Students are required to track their progress towards meeting each learning outcome and must make an appointment with the instructor for any grade equal to or less than a C. The instructor will suggest strategies to help you establish competence and knowledge in these areas.

Students should track their progress towards meeting each learning outcome by listing their grades on the table below over the course of the semester.

Course Module Objective:	Components Indicating Competence:	Grades Received
1	Discussion posts: Quiz 1,2, & 3; Lab 1; Exam 1	
2	Quiz 3; Exam 1; Spectrogram	
3	Exam 1	

Course Module Objective:	Components Indicating Competence:	Grades Received
4	Lab 2	
5	Quiz 1, 2, & 3; Exam 1	
6	Lab 2, Exam 1	
7-8	Exams 3 & 4	
9	Exam 2	
10-11	Exams 3 & 4	
12	Exams 3 & 4	
13	Exam 4	

Textbooks and Materials:

NO TEXTBOOKS ARE REQUIRED FOR THIS COURSE. ALL TEXTBOOK CHAPTERS ARE PROVIDED IN PDF FORMAT WITHIN THE CANVAS MODULES.

Small, Larry. (2020). *Fundamentals of Phonetics: A Practical Guide for Students*, Fifth Edition. Boston: Pearson.

Raphael, L.J. Borden, G.J., Harris, K.S., (2011). *Speech Science Primer: Physiology, Acoustics, and Perception of Speech*. Sixth Edition. MA: Lippincott, Williams & Wilkins.

Online Resources:

Canvas

Most of the handouts and materials for this class will be available on Canvas.

Course Requirements/Components:

Canvas: This course is embedded into a Web Course format. You ***must*** have an active csus.edu account and use CSUS's Canvas to access lectures, course assignments, class discussions and class email. See participation note below.

Assessment:

Student learning outcomes will be assessed with the following assessment strategies:

Discussions: (50 points total; 25 points each): Initial discussion posts, introduction to information. No fault as below.

Assignments (5 points each to total 65 points): Thirteen assignments are scheduled throughout the semester. These are no-fault assignments that will receive full points so long as they are submitted on time within Canvas. These assignments may be discussed in class, but individual feedback is limited unless you sign up/schedule an office visit with the instructor. The answers will be released to you after the homework submission date has passed. I encourage you to organize study groups and go over these assignments together to prepare for the exams.

Late Assignments: I will not accept **ANY** late assignments. It is your responsibility to get them submitted on time. This is to prepare you for the many reports, letters, and IEPs that you as a clinician will be writing in the future.

Quizzes (10 points each to total 30 points)

There will be three short quizzes at the beginning of the semester. These quizzes will be taken through the Canvas platform.

Exams (100 points each to total 400 points): There will be four exams (including the final). All exams are cumulative. Exam dates are tentative except final exam. All exams will be taken **in-person** and include a combination of multiple choice, short answer, fill-in, essay and transcription. All exams will be cumulative covering all material from the course up to the date of the exam. This is necessary since the material requires a build-up of knowledge throughout the semester. During the transcription sections of the course, the exams come up quickly after each other. Please pay close attention to the syllabus/schedule so you are well prepared for all exams.

Labs (50 points each to total 100 points): There will be two lab exercises. Each lab day students will complete and turn in completed lab write-ups. Lab write-ups include written responses to questions. ***Labs may be completed in pairs/groups but the write-up of the lab should be done individually.*** Complete instructions will be available in the assignment box on Canvas.

Spectrogram (55 points): Students will be given one spectrogram of a sentence at the end of the semester and will be asked to interpret what the sentence says by the last day of the semester. Results will be graded according to how well the student identifies the sentence/show effort in evaluating the spectrogram. This will be judged in terms of acoustically definable distinctive features and feasible linguistic entities.

Late Labs & Spectrograms: These may be turned in late; however, 10 points will be deducted for every day late (including weekend days) up to 50% of total points.

Grading Policy:

The instructor will not reply to emailed requests to “bump up” a grade. *Note:* For more information about grading at Sac State, visit the academic policies and grading section of the university catalog. There will be no additional opportunities for “extra credit” work. There are bonus questions added to some of the exams. Additionally, full credit will be awarded for completion of the chapter assignments (see above).

Your final Grade will be computed as follows:

Assessment	Points	Percentage of Total Points (approx.)
Assignments	65	9%
Discussions	50	7%
3 Quizzes	30	4%
4 Exams	400	57%
2 Lab Reports	100	14%
Spectrogram	55	7%
TOTAL POINTS	700 points	100%

Letter grades will be computed as a % of points earned out of a total of 650 points are assigned according to the following scores:

<u>%</u>	<u>Letter</u>	<u>%</u>	<u>Letter</u>
94.5-100	A	73.5 – 76.4	C
89.5 – 94.4	A-	69.5 – 73.4	C-
86.5 – 89.4	B+	66.5 – 69.4	D+
83.5 – 86.4	B	63.5 – 66.4	D
79.5 – 83.4	B-	59.5 – 63.4	D-
76.5 – 79.4	C+	below 59.5	F

Course Policies/Procedures:

Policy on making up exams: No make-up exams are given unless there is a documented medical emergency with written proof. **Any make up exams are scheduled during dead week and are in essay format.**

Being late for an exam will not automatically entitle you to extra time. Please make sure you arrange your schedules to be here on time for the exams. If you miss a short quiz because you are late for class, or absent you will not be able to make it up, so try not to miss any quizzes.

Policy on attendance: *Students are expected to attend class on a regular basis.* If you are unable to attend a class I need to be informed by you before class begins. If you arrive to the class late, please enter quietly. This is a very lecture heavy class with difficult concepts and needed practice. I have found that students who have three or more absences typically receive a final course grade below C. I offer time at the beginning of each lecture to answer questions regarding previously covered material. Following each class period, I expect you to be reading and studying the lecture material so this will allow you time for confirmation of ideas or clarification. Please communicate with fellow students to get notes, explanations, etc. as needed.

Drop/Add: Students may drop classes according to University/Department Policy. You should speak to me if you would like to add the course before attempting to do so. Students must fill out appropriate forms and meet University deadlines to drop or add classes.

Professional Conduct and Expectations: It is expected students will attend all classes and be ready to begin instruction on time. Please silence cell phones and electronic devices, and hold personal conversations outside of class, including texting.

Notify the professor in **advance** via e-mail if you cannot attend an EXAM or IN-CLASS ACTIVITY. Students may make up one exam or activity with advance notification and a **valid** excuse (illness, family emergency, etc.). If you will miss a class when a homework assignment is due, you may: (a) e-mail it on day of class, (b) or turn it in **prior** to due date. No late assignments will be accepted unless prior approval has been granted.

Additional Information

Hornet Honor Code

<https://www.csus.edu/student-affairs/internal/documents/hornet-honor-code.pdf>

As proud members and representatives of the Sacramento State Hornet community, we commit ourselves to actively promoting honesty, integrity, respect, and care for every person, ensuring a welcoming campus environment, and striving to help every member of our Hornet family feel a strong sense of belonging.

As Hornets, we will:

- Promote an inclusive campus and community
- Listen and respect each other's thoughts, interests, and views Value diversity and learn from one another
- Engage daily with mutual trust, care, and integrity
- Support a culture of honor and adhere to campus policies for honesty, ethics, and conduct
- Be proud to be Sac State Hornets.

Commitment to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Sac State's Academic Honesty Policy & Procedures

"The principles of truth and honesty are recognized as fundamental to a community of scholars and teachers. California State University, Sacramento expects that both faculty and students will honor these principles, and in so doing, will protect the integrity of academic work and student grades." Read more about Sac State's Academic Honesty Policy & Procedures at the following website:

<https://sacramentostate.policystat.com/policy/11300038/latest>

Definitions: At Sac State, "cheating is the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means." **Plagiarism** is a form of cheating. At Sac State, "plagiarism is the use of distinctive ideas or

works belonging to another person without providing adequate acknowledgement of that person's contribution." Source: Sacramento State University Library Note: Any form of academic dishonesty, including cheating and plagiarism, may be reported to the office of student affairs.

Department Policy on Use of APA format

The Department of Communication Sciences and Disorders requires the use of the APA format and style. All students are required to reference the APA manual. All assignments are to be composed using APA format and style unless otherwise noted.

Understand When You May Drop This Course

It is the student's responsibility to understand when he/she need to consider disenrolling from a course. Refer to the Sac State Course Schedule for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons include: (a) documented and significant change in work hours, leaving student unable to attend class, or (b) documented and severe physical/mental illness/injury to the student or student's family. Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if there is a compelling extenuating circumstance. All incomplete course assignments must be completed by the department's policy.

C- Grades for Prerequisite Courses

The Academic policy on prerequisite coursework posted in the Sac State Catalog Academic Policies (<https://catalog.csus.edu/academic-policies/>) within the Grading System Policies states:

C- Grades for Prerequisite Courses

A grade of "C-" or better is required for prerequisite courses. If a department requires a "C" or better in a prerequisite course and will not accept a "C-" grade, then the department must specify so in the catalog course description. This policy applies to all undergraduate-level courses.

Students who receive a grade below a "C-" may petition to continue in the CSAD BS program without repeating a major pre-requisite course at the link posted on the CSAD Handbooks: Resources, Forms and Information webpage: <https://www.csus.edu/college/health-human-services/communication-sciences-disorders/csad-handbooks.html>

Please note: filing a petition does not guarantee acceptance of prerequisite waiver. Each form will be reviewed on a case-by-case basis.

Equal Access

California State University-Sacramento, Department of Communication Sciences and Disorders, seeks to provide equal access to its programs, services, and activities for people with disabilities. If you have a documented disability and verification from the Disability Access Center (DAC), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to SSWD and meet with a SSWD counselor to request special accommodation before classes start. **Sacramento State Disability Access Center (DAC)** offers a wide range of support services and accommodations for students in order to ensure students with disabilities have equal access and opportunity to pursue their educational goals. Working collaboratively with students, faculty, staff and administrators, DAC provides consultation and serves as the information resource on disability related issues to the campus community. DAC is located in Lassen Hall 1008 and can be contacted by phone at (916) 278-6955 (Voice) or (916) 278-7239 (TDD only) or via email at dac@csus.edu Additional information can be found on the DAC website: <https://www.csus.edu/student-affairs/centers-programs/disability-access-center/>

Crisis Assistance & Resource Education Support (CARES) Support

If you are experiencing challenges in the area of food and/or stable housing, help is just a click, email or phone call away! Sacramento State offers basic needs support for students who are experiencing challenges in these areas. Please visit our Crisis Assistance & Resource Education Support (CARES) website to learn more about your options and resources available. <https://www.csus.edu/student-affairs/crisis-assistance-resource-education-support/>

Title IX

The University requires faculty and staff to report any personal disclosures of sexual misconduct including rape, dating/domestic violence and stalking to the Title IX Coordinator. Students who do not wish to report their experience to me or the Title IX Coordinator may speak to someone confidentially by contacting Student Health and Counseling Services.

Sac State is committed to supporting students and fostering a campus environment free of sexual misconduct and gender-based discrimination. If a student chooses to disclose to a faculty or staff member an experience related to sexual misconduct which includes

rape, relationship violence, or stalking, all faculty and staff are obligated to report this disclosure to the university's Title IX Coordinator. Sac State's Title IX Coordinator is Mary Lee Vance. Please email equalopportunity@csus.edu or (916) 278-5770. Upon receipt of the report, the Title IX Coordinator will contact you to inform you of your rights and options as a survivor and connect you with support resources, including resolution options for holding accountable the person who harmed you. Students who elect not to discuss their experience with the Title IX Coordinator can speak confidentially to the following confidential resources:

Student Health & Counseling Services at The WELL On Campus

Phone Number: 916-278-6461

Website: <https://www.csus.edu/student-life/health-counseling/counseling/>

Campus Confidential Advocate Email: weave@csus.edu

On Campus Phone Number: 916-278-5850 (during business hours)

WEAVE 24/7 Hotline: 916-920-2952

Student Health & Counseling Services at The WELL On Campus

Phone Number: 916-278-6461

Website: <https://www.csus.edu/student-life/health-counseling/counseling/>

Campus Confidential Advocate Email: weave@csus.edu

On Campus Phone Number: 916-278-5850 (during business hours)

WEAVE 24/7 Hotline: 916-920-2952

Other Resources

The Office of Student Affairs maintains a list of campus resources/centers: <https://www.csus.edu/center/>

Testing Center: <https://www.csus.edu/testing/>

Library: <https://library.csus.edu/>

Student Health and Counseling Services at The WELL: <https://www.csus.edu/shcs/>

Sacramento State Disability Access Center (DAC): <https://www.csus.edu/student-affairs/centers-programs/disability-access-center/>

Peer & Academic Resource Center: <https://www.csus.edu/parc/>

Student Academic Success and Education Equity Programs: <https://www.csus.edu/saseep/>

CHHS Student Success Center: <https://www.csus.edu/college/health-human-services/student-success/>

Reading & Writing Center: <https://www.csus.edu/undergraduate-studies/writing-program/reading-writing-center.html>

SMART Thinking (tutoring resource): <https://www.csus.edu/student-affairs/centers-programs/degrees-project/internal/documents/smarthinking.pdf>

TENTATIVE Course Schedule/Outline: ** = tentative, may be changed

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Readings/Practice</u>
1	Aug 25	Introduction: Course Overview	Assignment 1: Log on to Canvas and see instructions for Assignment 1 (Due Sep 3)
	Aug 27	Language, Phonetics and Speech Production	Reading: Raphael, Ch. 1, graded discussion post
2	Sep 1	Acoustics 1 and 2: Simple Harmonic Motion, Complex Waves, etc.	Holiday!! Go have fun!
	Sep 3	Acoustics 2 & 3: Physical and Perceptual Properties Quiz #1 (online on Canvas)	Reading: Raphael, Chapter 2: pp. 17-37 Assignment 1 Due
3	Sep 8	Acoustics 3: Physical and Perceptual Properties Acoustic Analysis/Measurement Techniques	Reading: Raphael, Chapter 13: pp. 276-285 Raphael, Chapter 14: pp. 287-297
	Sep 10	Quiz #2 Resonance & Source Filter Theory	Reading: Raphael, Chapter 2: pp. 37-39 Raphael, Chapter 5: pp 96-98
4	Sep 15	Lab 1 (Class and Home project) Resonance & Source Filter Theory	
	Sep 17	Quiz #3 Acoustics of Vowel Production	Reading: Raphael, Chapter 5: pp. 93-104
5	Sep 22	Front Vowels, Back Vowels, Diphthongs and Formant Transitions.	Reading: Raphael, Chapter 5: pp 104-112 Lab 1 Due
	Sep 24	Phonetic Sciences	Reading: Small, Chapter 1
6	Sep 29	Lab 2: Acoustics Lab** Folsom Hall 1029	Bring ALL course materials to Class
	Oct 1	Linguistic Phonetics: Speech vs. Language and Spelling vs. Sound Review for Exam 1	Reading: Small, Chapter 2: pp 9-18
7	Oct 6	Lab 2: Acoustics Lab** Folsom Hall 1029	Bring ALL course materials to Class
	Oct 8	Exam 1	Reading: Small, Chapter 2: pp 9-18
8	Oct 13	Linguistic Phonetics (cont.): Language Systems, Morphology, Phonology Phonemes vs. Allophones/Min Pair	Reading: Small, Chapter 2: pp 19-20 Small, Chapter 2: pp 30-31 Assignment 2-1 (due Oct 22) Assignment 2-2 items #1 & #2 (due Oct 22)
	Oct 15	Phonology Phonotactics: Syllables, Lexical Stress, Exercises in Stress	Reading: Small, Chapter 2 pp 20-25 Small, Chapter 2 pp 25-34 Assignment 2-2 Items #3 <u>through</u> #8 (due Oct. 23)

<u>Week</u>	<u>Date</u>	<u>Topic</u>	<u>Readings/Practice</u>
9	Oct 20	Lexical Stress, Phonotactics continued	
	Oct 22	Lab 2: Acoustics extra day	Assignments 2-1-2-2 all due. Lab 2 Due
10	Oct 27	Speech Production Systems Vowels Front Vowels	Reading: Small, Chapter 3, 4 Assignment 4-1
	Oct 29	Exam 2 Back and Central Vowels r-Colored Vowels & Diphthongs	Assignment 4-2 (due Nov 12) Assignment 4-3 (due Nov 12) Assignment 4-4 (due Nov 12)
11	Nov 3	Classification Systems of Consonants Place, Manner, Voicing Distinctive Features	Reading: Small, Chapter 5 pp 109-143 Assignment 5-1 and 5-2 (due Dec 3)
	Nov 5	(Con't) Classification Systems Place, Manner, Voicing Distinctive Features	
12	Nov 10	Stops, Nasals, Fricatives and Affricates	
	Nov 12	Approximant Consonants: Glides and Liquids <i>Review for Exam 3</i>	Reading: Small, Chapter 5 pp 143-154 Assignment 5-3, 5-4, and 5-5 (due Dec 3) Assignments 4-1 through 4-4 Due
13	Nov 17	Exam 3	
	Nov 19	Resonant Consonants	Work on Spectrograms ©
14	Nov 24	Non-Resonant Consonants	Reading: Raphael: Ch. 6, pp. 114-123
	Nov 26	Non-Resonant Consonants Practice real patient transcription	Independent Lab day; No class Go EAT! Reading: Raphael: Ch. 6, pp. 123-135
15	Dec 1	Diacritical Markers; phonological processes	Recorded Transcription Practice Lecture: No in person class/asynchronous
	Dec 3	Finish Lectures; Review, Spectrogram Review	Wooohoooo!!! Spectrograms Due , Extra Credit Due Assignment 5-1 through 5-5 Due
TBA		Final Exam Week	

Knowledge and Skills Acquisition (KASA) For Certification in Speech-Language Pathology

CSAD 110 Physics of Sound and Phonetics.

This course has been designed to be in direct support of the following American Speech-Language Hearing Association (ASHA) 2017 Knowledge and Skills Acquisition for certification in Speech-Language Pathology:

Standard IV-A

- The student will demonstrate prerequisite knowledge of the physical sciences.

Standard IV-C: Speech, Language, Hearing, Communication, and Swallowing Disorders and Differences

- The student will demonstrate the ability to analyze, synthesize and evaluate knowledge re: phonology, articulation disorders (including the etiologies, characteristics, and anatomical physiological, acoustic, psychological, developmental, linguistic, and cultural correlates.)
- The student will demonstrate the ability to analyze, synthesize and evaluate knowledge re: voice and resonance disorders (including the etiologies, characteristics, and anatomical physiological, acoustic, psychological, developmental, linguistic, and cultural correlates.)
- The student will demonstrate the ability to analyze, synthesize and evaluate knowledge re: receptive and expressive language disorders (phonology, morphology, syntax, semantics, pragmatics, prelinguistic communication, and paralinguistic communication) in speaking, listening, reading, writing, and manual modalities (including the etiologies, characteristics, and anatomical physiological, acoustic, psychological, developmental, linguistic, and cultural correlates.)

Standard IV-B: Basic Human Communication Processes

- The student will demonstrate the ability to analyze, synthesize and evaluate knowledge re: acoustic bases of human communication.
- The student will demonstrate the ability to analyze, synthesize and evaluate knowledge re: linguistic bases of human communication.