



California State University, Sacramento

Department of Communication Sciences and Disorders

GRADUATE (Au.D.) SYLLABUS

Semester/Year: Fall 2021	Course: CSAD 641: Auditory evoked potentials	Section: 01
Meeting Days: Tuesdays	Meeting Times: 6:00 pm - 8:50 pm	Location: Folsom 2204
Instructor: Kimberly Smith, Au.D.	Email: kimberly.smith@csus.edu	Phone: n/a
Office Location: Zoom a link will be emailed at the beginning of the semester	Office Hours/Appointments: Fridays 12:00 pm-1:00 pm by appointment only	

Catalogue Course Description:

Prerequisite(s): Admission to Doctor of Audiology program; CSAD 611, CSAD 612, CSAD 613, CSAD 614, CSAD 621, CSAD 622, CSAD 622L, CSAD 623, CSAD 624, CSAD 631, CSAD 632

Corequisite(s): CSAD 641 L

Term typically offered: Fall only

Place of Course in Program

CSAD 641: Physiological measures for evaluating the integrity of the auditory system. Emphasis on the administration and interpretation of the auditory brainstem response.

Sacramento State Graduate Learning Goals (GLG)	Addressed by this course (Y/N)
Disciplinary knowledge: <i>Master, integrate, and apply disciplinary knowledge and skills to current, practical, and important contexts and situations.</i>	Y
Communication: <i>Communicate key knowledge with clarity and purpose both within the discipline and in broader contexts.</i>	N
Critical thinking/analysis: <i>Demonstrate the ability to be creative, analytical, and critical thinkers.</i>	Y
Information literacy: <i>Demonstrate the ability to obtain, assess, and analyze information from a myriad of sources.</i>	Y
Professionalism: <i>Demonstrate an understanding of professional integrity.</i>	Y
Intercultural/Global Perspectives: <i>Demonstrate relevant knowledge and application of intercultural and/or global perspectives.</i>	N
Research: <i>Conduct independent research resulting in an original contribution to knowledge in the focused areas of their graduate program</i>	Y

Course Learning Outcomes:

GRADUATE

Mastery of each student-learning outcome listed below is indicated by a grade of B 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 B. 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.

CSAD 641 SPECIFIC STUDENT LEARNING OUTCOMES:

1. Describe the aspects of normal and abnormal peripheral and central auditory anatomy and physiology.
2. Discuss electrode placement and patient preparation for testing children and adults.
3. Describe calibration procedures for electrophysiological equipment.
4. Classify types of auditory evoked potentials.
5. State the uses, populations, test characteristics, considerations, and limitations of electrophysiological measures.
6. Give examples of uses for intraoperative monitoring within the scope of practice for audiologists.

Course Learning Outcome	Components Indicating Competence	Grades Received
1-6	Midterm Exam	
1-5	Term Paper	
1-5	Presentation	
1-6	Final Exam	
1-6	Participation	

Textbooks and Materials:

Atcherson, S. R., & Stoody, T. M. (2012). *Auditory Electrophysiology*. Thieme. (placed on reserve in the library)

Online Resources:

<https://csus.instructure.com/courses/84468>

Course Requirements/Components:

Class Participation and Attendance & Academic Performance Improvement Plan (APIP):

Participation: 10% (100 points) of the overall grade for the course will include student participation. Points will be deducted for unexcused absences and/or clear disregard of the course policies and procedures as outlined below.

Academic Performance Improvement Plan (APIP): An APIP will be initiated in accordance with the department policy as outlined in the provided link. https://www.csus.edu/college/health-human-services/communication-sciences-disorders/_internal/_documents/audiology/csad-apip-policy-spring-2020.pdf

Student Travel:

Class cannot be cancelled for students to attend a conference or personal vacation in agreement with CSUS Policy as outlined in the provided link. https://www.csus.edu/college/health-human-services/communication-sciences-disorders/_internal/_documents/policy/csad-student-travel-policy.pdf

Faculty Availability:

Office hours are by appointment only and will take place via Zoom. If a faculty member is not available during the semester, students will be contacted and advised how the course will proceed. This may include a change in instructor or modality.

Grading Policy:

Source	Points	% of Grade
Midterm Exam	300	30 %
Term Paper	150	15 %
Presentation	150	15 %
Final Exam	300	30 %
Participation	100	10 %

Letter grades are assigned according to the following scores:

Letter	%
A	93-100%
A-	90-92.99%
B+	87-89.99%
B	83-86.99%
B-	80-82.99%
C+	77-79.99%
C	73-76.99%
C-	70-72.99%
D+	67-69.99%
D	63-66.99%
D-	60-62.99%
F	< 60%

Course Policies/Procedures:

Academic conduct

Students enrolled in the Au.D. program must adhere to the Department and University policies on academic misconduct. Please see the department's policy on academic misconduct ("Policy on Student Academic and Clinical Conduct"). The following are expectations for professional behavior in the classroom:

- **Ethics:** Students must uphold the ethical standards set forth by professional bodies in the field (see Appendices C and D).
- **Respect:** Students should demonstrate respect to their peers, instructors, and staff.
- **Feedback:** Students are expected to self-reflect and modify their work in response to feedback, while displaying non-defensive behavior to suggestions.
- **Health:** Students should maintain their personal wellness and health, attending to any needs in a timely fashion in order to support their academic and professional growth.
- **Attire:** Students should dress appropriately for class. Classes may be held in clinic space, so students are expected to observe the clinic dress code.
- **Accountability:** Students are expected to be accountable, honest, and professional for their activities and communications. The general principles of ethical behavior should be applied to their coursework, evaluations, and examinations.
- **Language:** Students should demonstrate professional oral and written communication, including emails. Discretion and professional language should be used in all modalities, emphasizing constructive rather than reactive use.
- **Scholarship:** Students should take an active role in their learning, recognizing their deficiencies and seeking to correct them, as part of their commitment to lifelong learning.
- **Effort:** Students should collaborate and work to complete tasks and assignments on time or by the set deadline. Students are expected to follow through on all activities while maintaining professionalism and intellectual curiosity.

Attendance

Students are expected to arrive in class on time, prepared to participate and engage in classroom activities for both in-person and synchronous/virtual interactions. Students are responsible for class content, lecture materials, assignments, announcements, and must be aware of changes in the class schedule. Students are advised that instructional faculty may include an attendance policy in courses, which may require attendance as part of the student's course grade. These policies will be set in the syllabus.

Given the full-time, intensive nature of this doctoral program, it is important that students contact instructors if they are absent or are anticipating absence, especially over an extended period of time. In the case of the latter, the Au.D. Program Director must also be notified. Attendance for clinical practica is outlined in the clinic handbook.

Email

Students in the Au.D. program are required to maintain an active CSUS email address, which is linked to the student ID number. Official emails will be sent through CSUS email. Students are expected to regularly check their CSUS emails.

TENTATIVE Course Schedule/Outline:

Date	Topic/Class Content	Readings **see supplemental readings at the end of the syllabus**
8/31	What are Auditory Evoked Potentials?, Subject/Patient Factors, Calibration, Stimulus Factors, Acquisition Factors	Atcherson & Stoodly (2012) Chapters 1, 2, 20, 22
9/7	Waveform Analysis, Neuroanatomy and Neurophysiology, Electrocochleography	Atcherson & Stoodly (2012) Chapters 3, 4, 5
9/14	Electrocochleography, Electrical Compound Action Potential	Atcherson & Stoodly (2012) Chapters 12, 21, Supplementals
9/21	Auditory Brainstem Response, Automated Auditory Brainstem Response	Atcherson & Stoodly (2012) Chapters 6, 13, 14
9/28	Auditory Brainstem Response, Neurodiagnostic Auditory Brainstem Response	Atcherson & Stoodly (2012) Chapter 16
10/5	Auditory Steady State Response	Atcherson & Stoodly (2012) Chapters 8, 15, Supplementals
10/12	Auditory Middle Latency Response, Auditory Latency Response	Atcherson & Stoodly (2012) Chapters 9, 10
10/19	Midterm Exam	
10/26	eABR, Central Auditory Processing of Complex Stimuli, CHAMP	Atcherson & Stoodly (2012) Chapter 17, Supplementals
11/2	P300, Mismatch Negativity Response	Atcherson & Stoodly (2012) Chapter 10
11/9	Stacked ABR, Auditory Training Efficacy, Research & Evoked Potentials	Atcherson & Stoodly (2012) Chapter 7
11/16	Intraoperative Monitoring	Atcherson & Stoodly (2012) Chapter 18
11/23	Student Presentations	Term Paper Due
11/30	Counseling	
12/7	Catch up / Final Review	
	Final Exam during the week of December 13th	

Online Learning

For additional information, please review the [CSAD Handbooks](https://www.csus.edu/college/health-human-services/communication-sciences-disorders/student-resources.html) website

<https://www.csus.edu/college/health-human-services/communication-sciences-disorders/student-resources.html>

Zoom/ Online Instruction privacy and relevant rights and responsibilities:

Any time that a class session is recorded during the COVID-19-related Remote Instruction Period, students will be notified. If students do not want their likeness during class participation included in the recorded class session, they may elect to not participate via video recordings. Recordings will be available for viewing during the Remote Instruction Period subject to the following:

Only students enrolled in the subject class during the Remote Instruction Period may view the recording.

- Students may not post or use the recordings in any other setting (e.g., social media) for any purpose. Students who violate this will be subject to student discipline, up to and including expulsion.
- Federal and California law as well as University policies protecting intellectual property rights and use of instructional materials (including any recordings of class sessions) remain in effect during the Remote Instruction Period.
- If faculty have any plan to use the recording for a different class in the future, the faculty member will need

written FERPA consent from those students in the current class who are identifiable in any of the recordings. A FERPA consent form signed by all students in the course will also be needed if the recordings are made available to others beyond the classroom on a nonsecure digital platform.

Important Tips for Success as an Online Learner

There are some basic technical skills and requirements that you will need to have to be successful in this online course. If you have difficulties using Canvas, please go through the [Canvas Student Tour](#).

- ***Begin planning now for private, uninterrupted time in your schedule*** to complete the assignments – preferably in at least one-hour blocks and at least three times a week. It can be easy to fall behind!
- *Check your email account regularly* for updated information. We will be using your Saclink email account for communication. Use Saclink e-mail for private messages to the instructor and other students.
- Read directions carefully.
- For online communication, conventions of on-line etiquette ("netiquette"), which include a courtesy to all users, will be observed. Please see [Guidelines for Online Discussions](#).

Attitudes & Technical Skills Required

You will find that the following attitude will significantly contribute to your success in this class:

- A positive attitude towards technology
- An open mind towards online education
- Willingness to share your experiences with others
- Strong analytical and critical thinking skills for when you "get stuck"
- Resourcefulness - don't be afraid to click on links and explore and ask questions
- Time management

Online learning requires only basic technical skills:

- Be competent with file management (for example, creating a folder on your desktop, moving files from one location to another, finding a saved file)
- Possess internet navigation skills
- Update your Internet browser
- Send and receive email
- Create and save documents (Word, PowerPoint, Excel or HTML)
- Toggle between two open software applications on your computer
- Copy text from a word processing program and paste them into another program

Technical Assistance

Seek help when you can't access Canvas or class materials.

- For technical assistance, contact the IRT Help Desk. Visit AIRC 2005 during [open hours](#) to speak with the IRT Service Desk Team, or call (916)278-7337. [IRT website](#).
- For assistance with course materials, contact your instructor

Spam and Phishing Scams

- Learn how to stay safe and protect yourself from hackers who may try to access your personal information: [Don't Fall for a Phishing Scam](#)
- Use anti-virus, anti-spyware, and anti-malware software. [Sac State's Software and Tools](#) available for download.
- Use pins and passwords to secure your computer and devices- don't share your password with anyone. Use strong passwords that include a combination of letters and numbers that no one can guess.

Canvas Student App

Canvas is fully functional on many types of smartphones and tablets. Compatible devices include platforms such as iPhone/iPad/iPod Touch, and Android. However, it is recommended that you do not solely rely on one of these devices to complete your online course work. Access to a computer is still needed for many online activities. Visit the [Mobile section](#) of the [Canvas Guides](#) website for more information.

Additional Information

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://www.csus.edu/umannual/student/stu-100.htm>

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, shall be reported to the [Office of Student Conduct](#).

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 needs 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. Information for students regarding drop and withdrawal from classes is provided here:

<https://www.csus.edu/academic-affairs/internal/internal/documents/drop-and-withdrawal-policy.pdf>

Inclusivity:

Students in this class are encouraged to be active participants in all aspects of the course, including but not limited to lectures, synchronous and asynchronous activities, discussion posts, etc. Each of us must show respect for each other, as our class represents a diversity of beliefs, backgrounds, and experiences. This enriches all of our learning experiences together. Our individual differences deepen our understanding of one another and the world around us, rather than divide us. In this class, people of all ethnicities, genders and gender identities, religions, ages, sexual orientations, disabilities, socioeconomic backgrounds, regions, and nationalities are strongly encouraged to share their rich array of perspectives and experiences. If you feel your differences may in some way isolate you from our classroom community, or if you have a specific need, please contact the instructor early in the semester. Your

instructor will work with you to ensure that you become an active and engaged member of our class and community.

Equal Access:

Services to Students with Disability (SSWD): Sacramento State is committed to ensuring an accessible learning environment where course or instructional content are usable by all students and faculty. If you believe that you require disability-related academic adjustments for this class, please immediately contact Services for Students with Disabilities (SSWD) to discuss eligibility. A current accommodation letter from SSWD is required before any modifications, above and beyond what is otherwise available for all other students in this class will be provided. SSWD 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 sswd@csus.edu.

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 Office of Services to Students with Disabilities (SSWD), 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.

Basic Needs Support

If you are experiencing challenges with food, housing, financial or other unique circumstances that are impacting your education, help is just a phone call or email away! The CARES office provides case management support for any enrolled student. Email the CARES office at cares@csus.edu to speak with a case manager about the resources available to you. Check out the [CARES website](#).

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.

CSUS Grading Policy

Information for students regarding grading is provided here:

<https://www.csus.edu/umannual/acad/umg05150.htm>

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/student-affairs/centers-programs/testing-center/>
- Library: <https://library.csus.edu/> for consultation : Rachel Stark, MS, AHIP, stark@csus.edu
- Services to Students with Disabilities: <https://www.csus.edu/student-affairs/centers-programs/services-students-disabilities/>
- Student Health and Counseling Services at The WELL: <https://www.csus.edu/student-life/health-counseling/>

- Student Academic Success and Education Equity Programs: <https://www.csus.edu/student-affairs/retention-academic-success/>
- Crisis Assistance and Resource Education Support (CARES): <https://www.csus.edu/student-affairs/crisis-assistance-resource-education-support/>
- 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>
- Peer & Academic Resource Center: <https://www.csus.edu/student-affairs/centers-programs/peer-academic-resource/>
- SMART Thinking (tutoring resource): <https://www.csus.edu/student-affairs/centers-programs/degrees-project/internal/documents/smarthinking.pdf>

Knowledge And Skills Acquisition (KASA) For Certification in Audiology

Scientific and Research Foundations

- The basic sciences
- Basic science skills (e.g., scientific methods, critical thinking)

Standard II-A: Foundations of Practice

- A1. Genetics, embryology and development of the auditory and vestibular systems, anatomy and physiology, neuroanatomy and neurophysiology, and pathophysiology of hearing and balance over the life span
- A5. Calibration and use of instrumentation according to manufacturers' specifications and accepted standards
- A6. Standard safety precautions and cleaning/disinfection of equipment in accordance with facility-specific policies and manufacturers' instructions to control for infectious/contagious diseases
- A7. Applications and limitations of specific audiologic assessments and interventions in the context of overall client/patient management
- A13. Principles of research and the application of evidence-based practice (i.e., scientific evidence, clinical expertise, and client/patient perspectives) for accurate and effective clinical decision making
- A14. Assessment of diagnostic efficiency and treatment efficacy through the use of quantitative data (e.g., number of tests, standardized test results) and qualitative data (e.g., standardized outcome measures, client/patient-reported measures)

Standard II-C: Audiologic Evaluation

- C1. Gathering, reviewing, and evaluating information from referral sources to facilitate assessment, planning, and identification of potential etiologic factors
- C4. Identifying, describing, and differentiating among disorders of the peripheral and central auditory systems and the vestibular system
- C10. Evaluating basic audiologic findings and client/patient needs to determine differential diagnosis and additional procedures to be used

- C11. Selecting, performing, and interpreting physiologic and electrophysiologic test procedures, including electrocochleography, auditory brainstem response with frequency-specific air and bone conduction threshold testing, and click stimuli for neural diagnostic purposes
- C13. Selecting, performing, and interpreting tests for nonorganic hearing loss
- C16. Electrophysiologic testing, including but not limited to auditory steady-state response, auditory middle latency response, auditory late (long latency) response, and cognitive potentials (e.g., P300 response, mismatch negativity response)

Standard II-E: Audiologic Rehabilitation Across the Life Span

- E14. Identifying individuals who are candidates for cochlear implantation and other implantable devices

Supplemental Readings by Topic

ABR

Ehrmann-Müller, D., Cebulla, M., Rak, K., Scheich, M., Back, D., Hagen, R., & Shehata-Dieler, W. (2019).

Evaluation and therapy outcome in children with auditory neuropathy spectrum disorder (ANSO).

International Journal of Pediatric Otorhinolaryngology, 127, 109681. <https://doi.org/10.1016/j.ijporl.2019.109681>

Gorga, M. P., Johnson, T. A., Kaminski, J. R., Beauchaine, K. L., Garner, C. A., & Neely, S. T. (2006). Using a

Combination of Click- and Tone Burst-Evoked Auditory Brain Stem Response Measurements to Estimate

Pure-Tone Thresholds. *Ear & Hearing*, 27(1), 60–74. <https://doi.org/10.1097/01.aud.0000194511.14740.9c>

ALR

Bertoli, S., Probst, R., & Bodmer, D. (2011). Late auditory evoked potentials in elderly long-term hearing-aid users

with unilateral or bilateral fittings. *Hearing Research*, 280(1–2), 58–69.

<https://doi.org/10.1016/j.heares.2011.04.013>

ASSR

Rodrigues, G. R. I., & Lewis, D. R. (2010). Threshold prediction in children with sensorineural hearing loss using

the auditory steady-state responses and tone-evoked auditory brain stem response. *International Journal of*

Pediatric Otorhinolaryngology, 74(5), 540–546. <https://doi.org/10.1016/j.ijporl.2010.02.017>

Rance, G., & Rickards, F. (2002). Prediction of Hearing Threshold in Infants Using Auditory Steady-State Evoked

Potentials. *Journal of the American Academy of Audiology*, 13(05), 236–245. [https://doi.org/10.1055/s-0040-](https://doi.org/10.1055/s-0040-1715967)

[1715967](https://doi.org/10.1055/s-0040-1715967)

cABR

Skoe, E., & Kraus, N. (2010). Auditory Brain Stem Response to Complex Sounds: A Tutorial. *Ear & Hearing*, 31(3),

302–324. <https://doi.org/10.1097/aud.0b013e3181c1db272>

CHAMP

Don, M., Kwong, B., & Tanaka, C. (2005). A Diagnostic Test for Ménière's Disease and Cochlear Hydrops:

Impaired High-Pass Noise Masking of Auditory Brainstem Responses. *Otology & Neurotology*, 26(4), 711–722.

<https://doi.org/10.1097/01.mao.0000169042.25734.97>

ECOG

Mammarella, F., Zelli, M., Varakliotis, T., Eibenstein, A., Pianura, C. M., & Bellocchi, G. (2017). Is

Electrocochleography Still Helpful in Early Diagnosis of Meniere Disease? *Journal of Audiology and Otology*,

21(2), 72–76. <https://doi.org/10.7874/jao.2017.21.2.72>

IOM

Stankovic, P., Wittlinger, J., Georgiew, R., Dominas, N., Hoch, S., & Wilhelm, T. (2020). Continuous intraoperative

neuromonitoring (cIONM) in head and neck surgery—a review. *HNO*, 68(S2), 86–92.

<https://doi.org/10.1007/s00106-020-00824-1>

MMN

Li, Y., Shen, M., & Long, M. (2019). A preliminary study of auditory mismatch response on the day of cochlear

implant activation in children with hearing aids prior implantation. *PLOS ONE*, 14(1), e0210457.

<https://doi.org/10.1371/journal.pone.0210457>

P300

Gustafson, S. J., Key, A. P., Hornsby, B. W. Y., & Bess, F. H. (2018). Fatigue Related to Speech Processing in

Children With Hearing Loss: Behavioral, Subjective, and Electrophysiological Measures. *Journal of Speech,*

Language, and Hearing Research, 61(4), 1000–1011. https://doi.org/10.1044/2018_jslhr-h-17-0314