

Last name of instructor (Semester Year)

**California State University, Sacramento**  
**CENTRAL AUDITORY PROCESSING DISORDERS**  
CSAD672 - 3 units  
Fall 2021 (AUD-3)

**COURSE FACULTY**

**Course Instructor:**  
**Folsom Hall office #:**  
**Office Phone:**  
**Office Hours:**  
**E-mail address:**

**REQUIRED CLASS MEETINGS TIMES**

Days and times:  
Building: Folsom      Room #:

**REQUIRED TEXTS**

Musiek, F.E., & Chermak, G.D. (2013). *Handbook of central auditory processing disorder, volume I: Auditory neuroscience and diagnosis*. Plural Publishing.

Katz, J. (2011). *Handbook of clinical audiology* (7<sup>th</sup> ed.). Plural Publishing.

**OPTIONAL TEXTS**

**COURSE WEBSITE**

<https://sacct.csus.edu>

SacCT will be used as the learning management site for dissemination of course readings, handouts, slides, assignments, announcements, and tests/quizzes. The course faculty will have materials posted to SacCT at least 48 hours before class.

**Instructor Communication and Response Time**

Faculty strive to have open communication with students both within and outside of the classroom. Students are encouraged to contact faculty to discuss questions about the course. Responses to telephone or e-mail messages will usually be transmitted within 48 hours during regular working hours. If you do not have a response within this time period, please check your contact methods and resend the message. Faculty will generally respond to student questions received during evenings and weekends once they are back in the office during regular business hours.

**\*Please be aware that all content for this course is the property of the course faculty who have created it and can only be used for this course. Those wishing to use the materials outside of this course must receive written permission from the author/creator.**

**GENERAL COURSE INFORMATION**

**PRE-REQUISITES**

Admission to Doctor of Audiology program; CSAD611, CSAD612, CSAD613, CSAD614, CSAD621, CSAD622, CSAD622L, CSAD623, CSAD624, CSAD631, CSAD632, CSAD641, CSAD641L, CSAD642, CSAD643, CSAD651, CSAD652, CSAD653, CSAD661, CSAD662

**COURSE DESCRIPTION**

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## Overview

This course will review the concepts related to acoustics, psychoacoustics, anatomy and physiology, and speech perception as they relate to the central auditory system. Topics covered will include current issues in the definition, diagnosis, assessment, and management of APD based on literature and clinical guidelines. The use of technology and the importance of a multidisciplinary team will also be discussed.

### Approved Course Description (from CSUS Course Catalog)

Definition and role of audiologists in the assessment, diagnosis, and management of children, adults, and older adults with auditory processing disorder.

### **WHY IS THIS COURSE IMPORTANT?**

This course is important for students to understand the role of the central auditory system in the perception and processing of speech. Students will be able to perform and interpret central auditory processing assessments, including behavioral and electrophysiological tests.

### **UNIVERSITY LEARNING GOALS**

	1 Disciplinary knowledge	2 Communication	3 Critical thinking/analysis	4 Information literacy	5 Professionalism	6 Intercultural/global perspectives	7 Research
Addressed by this course	X	X	X	X	X	X	X

### **GRADUATE LEARNER OUTCOMES**

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.

Upon completion of this course, students will be able to:

1. Define auditory processing
2. Differentiate between peripheral and central auditory system functions in the perception of speech
3. Describe theories of speech perception
4. Explain the theories and current literature related to the processing of auditory information
5. List the components of an APD test battery
6. Perform testing procedures within the APD test battery
7. Describe approaches to treat and manage APD
8. Explain how hearing aids and hearing assistive technology can be used to manage APD
9. Identify key members of the interprofessional team for managing APD in children
10. Identify resources available for patients with APD

Graduate Learner Outcome	Component Indicating Competence	Grade(s) Received
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1-10	Exam (100%)	
1-10	Quiz (100%)	
3,4,8	Research paper (100%)	
5,6	Laboratory (100%)	

## **COURSE/CLASS POLICIES**

### **Course Format**

Lecture

### **Class Preparation:**

All required readings are for the date listed in the course schedule, not the following class period. Students are responsible for all assigned readings, whether discussed in class or not.

### **Class Participation:**

Students are expected to actively participate in class discussions and are required to have read the assigned material prior to class meetings.

### **Class Attendance:**

Classroom attendance is necessary for this course. No more than three unexcused absences are allowed. Students are expected to arrive on time as class begins at X:XX am/pm.

### **Class Assignments**

Course grades will be based on ten quizzes, a research paper, a lab report, and three exams.

### **Lab Report**

Each student will administer an auditory processing test battery to a classmate. The lab report includes the interpretation of test results and a reflection of any insights gained through the experience as the "audiologist" and "patient."

### **Research Paper**

Students will write a research paper on one of the topics covered in the course.

### **Quizzes**

Weekly quizzes will be available on SacCT one week prior to the due date. Students are expected to complete the quiz before the scheduled due date. Quizzes are based on assigned reading. Students will have 60 minutes to take the quiz; late submissions will receive a 0.

### **Exams**

- **Exam absences:** No make-up examinations will be given unless there is a documented emergency for which you have written proof. Any approved make-up exams will be scheduled at the end of the semester (during finals week) and may be administered in a different format from the original exam.

- **Exam procedures:**

Test arrival/start

Test duration and completion

### **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.

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### **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: <http://www.csus.edu/um anual/AcademicHonestyPolicyandProcedures.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 affairs.

### **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 in accordance with the department's policy.

### **Accommodations**

Inform your instructor of any accommodations needed. 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. SSWD is located in Lassen Hall 1008 and can be contacted by phone at [\(916\) 278-6955](tel:9162786955) (Voice) or [\(916\) 278-7239](tel:9162787239) (TDD only) or via email at [sswd@csus.edu](mailto:sswd@csus.edu)

### **Course Requirement Grading**

<b><u>Activity</u></b>	<b><u>Points Available</u></b>
Quizzes (10 points x 10)	100
Research paper	200
Lab report	200
Exam (date and material covered)	200
Exam (date and material covered)	200
Final exam (date and material covered)	300
<b><u>TOTAL COURSE POINTS AVAILABLE</u></b>	1200

### **Overall Percentage Needed**

Note: A grade of "B" or higher is required to count toward the minimum number of units needed to advance to candidacy.

<b><u>Grade</u></b>	<b><u>Percentage</u></b>
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A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	< 60%

**COURSE SCHEDULE OF LECTURE TOPICS AND EXAMS**

Date	Topic and Activity or Quiz and Exam	Readings/ Assignment
8/26	Introduction to course Overview of CAPD	Musiek & Chermak- Ch. 1
8/28	Review of acoustics	
9/2	Review of psychoacoustics	Katz- Ch. 26
9/4	Review of peripheral auditory system Review of central auditory system	Musiek & Chermak- Ch. 3-4
9/9	Review of neuroanatomy and neurophysiology	Katz- Ch. 25
9/11	Etiology Clinical populations	Musiek & Chermak- Ch.7-8
9/16	Maturation and neuroplasticity	Musiek & Chermak- Ch. 2  Bamiou, D. E., Musiek, F. E., & Luxon, L. M. (2001). Aetiology and clinical presentations of auditory processing disorders—a review. <i>Archives of Disease in Childhood, 85</i> (5), 361-365.
9/18	Review for Exam 1	
9/23	<b>Exam 1</b>	
9/25	Questionnaires Case history	Katz-Ch. 27  Smoski, W. J., Brunt, M. A., & Tannahill, J. C. (1992). Listening characteristics of children with central auditory processing disorders. <i>Language, Speech, and Hearing Services in Schools, 23</i> (2), 145-152.  Moore, D. R., Ferguson, M. A., Edmondson-Jones, A. M., Ratib, S., & Riley, A. (2010). Nature of auditory processing

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		disorder in children. <i>Pediatrics</i> , 126(2), e382-e390.
9/30	Current issues in CAPD Proposed definitions of CAPD	Musiek & Chermak- Ch. 8-9  Moore, D. R. (2011). The diagnosis and management of auditory processing disorder. <i>Language, speech, and hearing services in schools</i> , 42(3), 303-308.
10/2	Models and theories	Jutras, B., Loubert, M., Dupuis, J. L., Marcoux, C., Dumont, V., & Baril, M. (2007). Applicability of central auditory processing disorder models. <i>American Journal of Audiology</i> , 16(2), 100-106.
10/7	Temporal processing	Musiek & Chermak- Ch. 15  Shinn, J., Chermak, G.D., & Musiek, F.E. (2009). GIN (Gaps-In-Noise) performance in the pediatric population. <i>Journal of the American Academy of Audiology</i> , 20, 229-238.  Vaidyanath, R., & Yathiraj, A. (2015). Comparison of performance of older adults on two tests of temporal resolution. <i>American Journal of Audiology</i> , 24(2), 216-225.  Hoover, E., Pasquesi, L., & Souza, P. (2015). Comparison of clinical and traditional gap detection test. <i>Journal of the American Academy of Audiology</i> , 26(6), 540-546.
10/9	Monaural low-redundancy tests	Musiek & Chermak- Ch. 13
10/14	Binaural listening Dichotic digits	Musiek & Chermak- Ch. 14, 16  Fischer et al. (2017). Dichotic digits test

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		performance across the ages: Results from two epidemiologic cohort studies. <i>Ear &amp; Hearing</i> , 38(3), 314-320.
10/16	Speech in noise tests	<p>Putter-Katz, H., Adi-Bensaid, L., Feldman, I., &amp; Hildesheimer, M. (2008). Effects of speech in noise and dichotic listening intervention programs on central auditory processing disorders. <i>Journal of Basic and Clinical Physiology and Pharmacology</i>, 19(3-4), 301-316.</p> <p>Lagace, J., Jutruas, B., &amp; Gagné, J.P. (2010). Auditory processing disorder and speech perception problems in noise: Finding the underlying origin. <i>American Journal of Audiology</i>, 19, 17-25.</p>
10/21	Auditory discrimination tests	<p>Ludwig, A.A., Fuchs, M., Kruse, E., Uhlig, B., Kotz, S.A., &amp; Rübsamen, R. (2014). Auditory processing disorders with and without central auditory discrimination deficits. <i>Journal of the Association of Research in Otolaryngology</i>, 15(3), 441-464.</p> <p>Rota-Donahue, C., Schwartz, R. G., Shafer, V., &amp; Sussman, E. S. (2016). Perception of Small Frequency Differences in Children with Auditory Processing Disorder or Specific Language Impairment. <i>Journal of the American Academy of Audiology</i>, 27(6), 489-497.</p>
10/23	Localization Lateralization	Kühnle, S., Ludwig, A.A., Meuret, S., Küttner, C., Witte, C., Scholbach, J., Fuchs, M., & Rübsamen, R. (2013). Development of auditory localization accuracy and auditory spatial discrimination

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		<p>in children and adolescents. <i>Audiology &amp; Neurotology</i>, 18, 48-62.</p> <p>Lotfi, Y., Moosavi, A., Abdollahi, F. Z., Bakhshi, E., &amp; Sadjedi, H. (2016). Effects of an Auditory Lateralization Training in Children Suspected to Central Auditory Processing Disorder. <i>Journal of Audiology &amp; Otology</i>, 20(2), 102–108.</p>
10/28	Review for Exam 2	
10/30	<b>Exam 2</b>	
11/4	Electrophysiological and electroacoustic tests MLR	<p>Musiek &amp; Chermak- Ch. 17</p> <p>Jerger, J., Thibodeau, L., Martin, J., Mehta, J., Tillman, G., Greenwald, R.,...Overson, G. (2002). Behavioral and electrophysiologic evidence of auditory processing disorder: A twin study. <i>Journal of the American Academy of Audiology</i>, 13(8), 438-460.</p>
11/6	MLR LLR	<p>Jerger, J., &amp; Lew, H.L. (2004). Principles and clinical applications of auditory evoked potentials in the geriatric population. <i>Physical Medicine and Rehabilitation Clinics of North America</i>, 15(1), 235-250.</p>
11/11	LLR, P300, MMN	<p>Bertoli, S., Smurzynski, J., &amp; Probst, R. (2002). Temporal resolution in young and elderly subjects as measured by mismatch negativity and a psychoacoustic gap detection task. <i>Clinical Neurophysiology</i>, 113(3), 396-406.</p> <p>Oliveira, J.C., Murphy, C.F., &amp; Schochat, E. (2013). Auditory processing in children with dyslexia: Electrophysiological and behavior evaluation.</p>

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		<i>Codas</i> , 25(1), 39-44.
11/13	Effects of hearing loss in peripheral auditory system Aging and APD	<p>Pichora-Fuller, M. K., &amp; Souza, P. E. (2003). Effects of aging on auditory processing of speech. <i>International journal of audiology</i>, 42(sup2), 11-16.</p> <p>Atcherson, S.R., Nagaraj, N.K., Kennett, S.E.W., &amp; Levissee, B.S. (2015). Overview of central auditory processing deficits in older adults. <i>Seminars in Hearing</i>, 36(3), 150-161.</p>
11/18	Test battery	<p>Katz-Ch. 27</p> <p>Keith, R.W. (2000). Development and standardization of SCAN-C test for auditory processing disorders in children. <i>Journal of the American Academy of Audiology</i>, 11(8), 438-445.</p> <p>Neijenhuis, K., Snik, A., &amp; van den broek, P. (2003). Auditory processing disorders in adults and children: Evaluation of a test battery. <i>International Journal of Audiology</i>, 42(7), 391-400.</p>
11/20	Auditory training	<p>Chermak, G. D., &amp; Musiek, F. E. (2002). Auditory training: principles and approaches for remediating and managing auditory processing disorders. In <i>Seminars in Hearing</i> (Vol. 23, No. 04, pp. 297-308).</p> <p>Musiek, F. E., Shinn, J., &amp; Hare, C. (2002). Plasticity, auditory training, and auditory processing disorders. In <i>Seminars in hearing</i> (Vol. 23, No. 04, pp. 263-276). Copyright© 2002 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel.:+ 1 (212) 584-4662.</p> <p>Schochat, E., Musiek, F.E.,</p>

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		Alonso, R., & Ogata, J. (2010). Effect of auditory training on the middle latency response in children with (central) auditory processing disorder. <i>Brazilian Journal of Medical and Biological Research</i> , 43(8), 777-785.
11/27	Acoustic and environmental modifications	Kuk, F., Jackson, A., Keenan, D. & Lau, C.C. (2008). Personal amplification for school-age children with auditory processing disorders. <i>Journal of the American Academy of Audiology</i> , 19(6), 465-480.
12/2	Differential diagnoses The role of the SLP	Musiek & Chermak- Ch. 18-20  Sharma, M., Purdy, S. C., & Kelly, A. S. (2009). Comorbidity of auditory processing, language, and reading disorders. <i>Journal of Speech, Language, and Hearing Research</i> , 52(3), 706-722.
12/4	Review for final exam	
12/12	<b>Final exam</b>	

Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.